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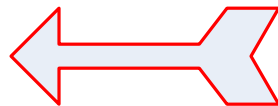
LEGEND



Indicates a Protocol

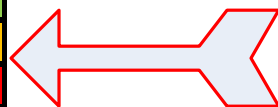


Indicates a Medication / Treatment



Indicates an Intervention

Legend		
F	First Responder	F
B	EMT	B
A	Advanced EMT	A
P	Paramedic	P
M	Medical Control	M
P	Paramedic with	P
M	Online Medical Control	M

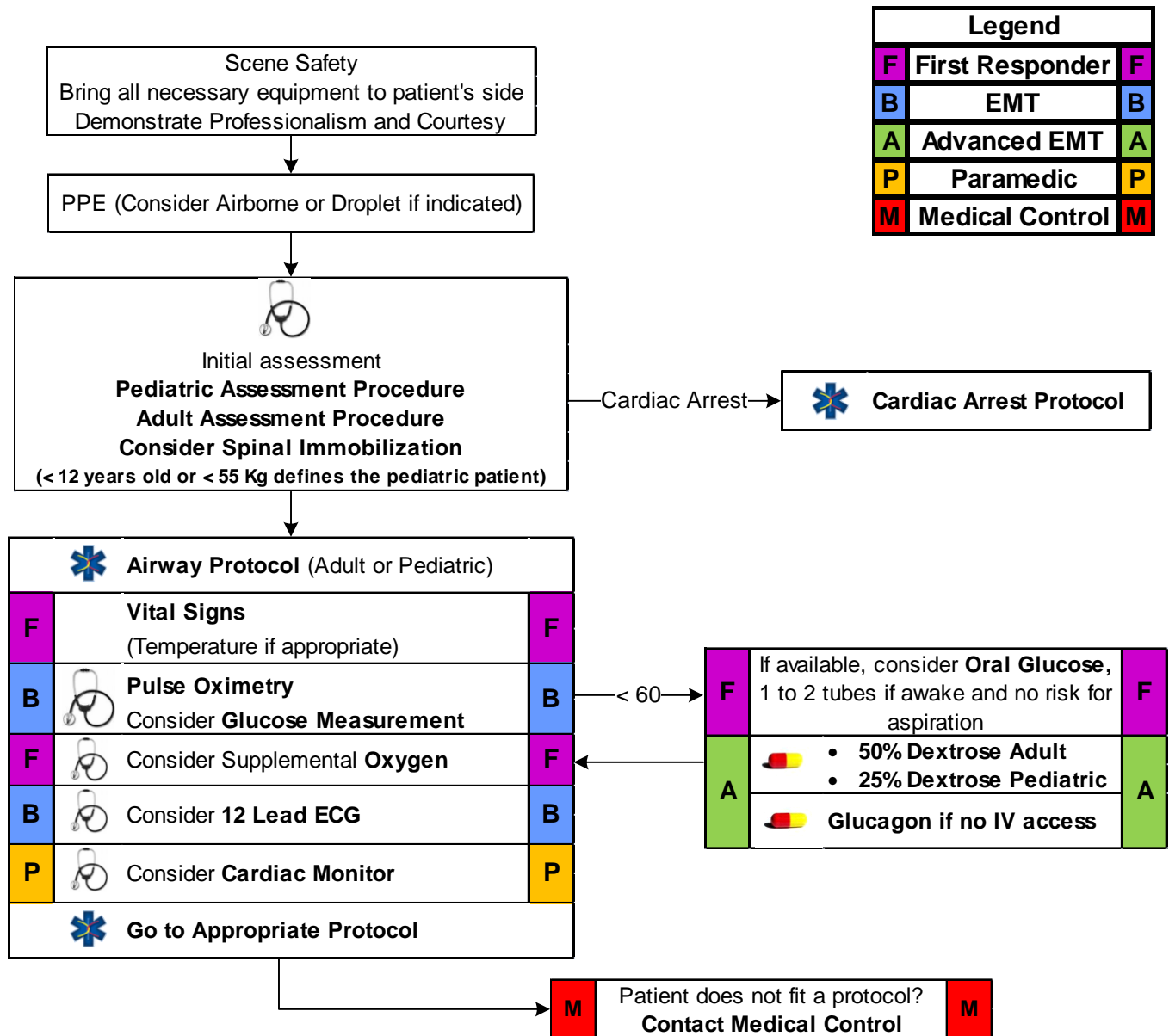


Indicates the Minimum Level of Provider authorized to perform this task.

The P/M symbol indicates that the Paramedic may perform the intervention only with OnLine Medical Direction.



Universal Patient Care Protocol

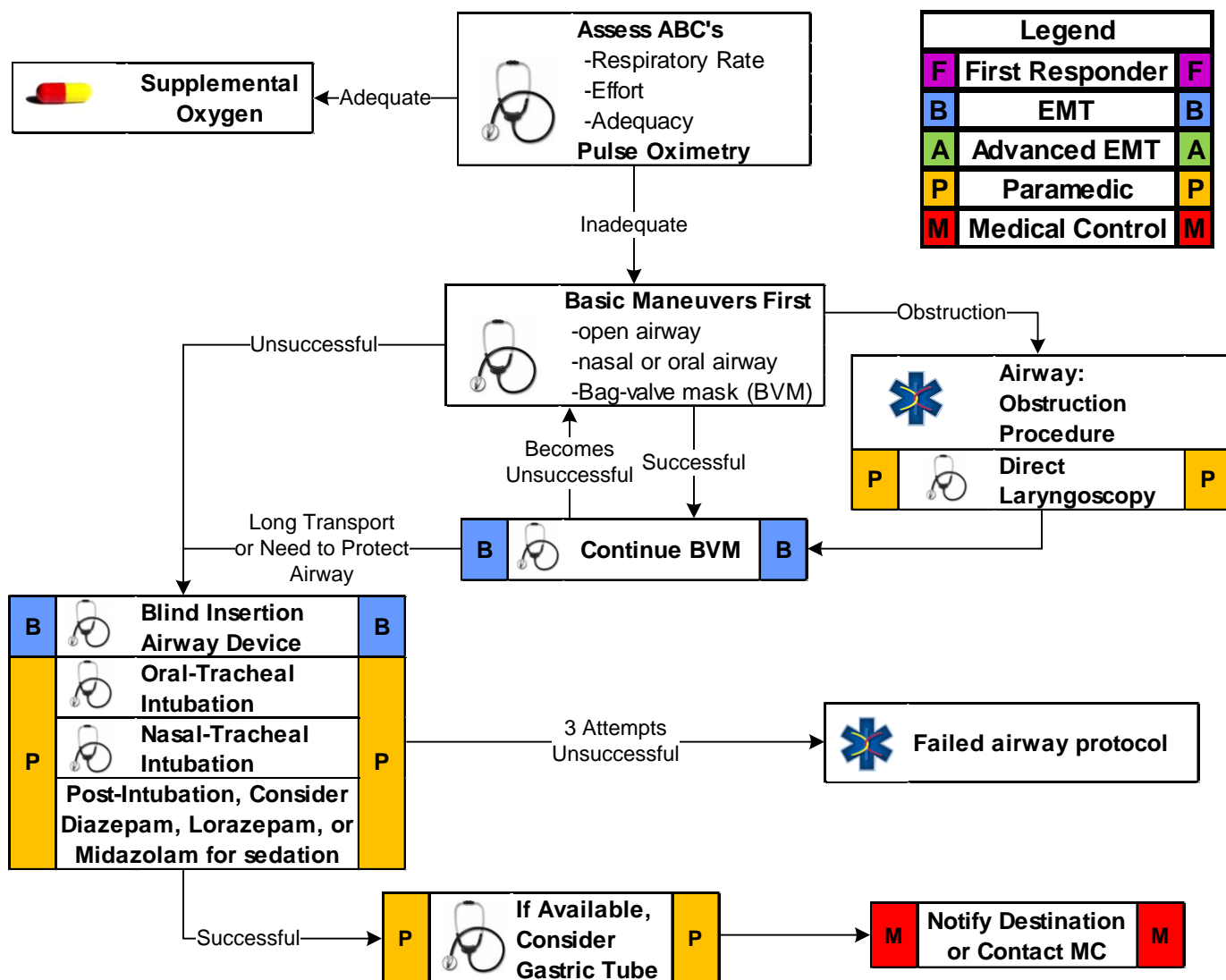


Pearls

- **Recommended Exam: Minimal exam if not noted on the specific protocol is vital signs, mental status with GCS, and location of injury or complaint.**
- Any patient contact which does not result in an EMS transport must have a completed disposition form.
- Required vital signs on every patient include blood pressure, pulse, respirations, pain / severity.
- Pulse oximetry and temperature documentation is dependent on the specific complaint.
- A pediatric patient is defined by < 12 years old or < 55 Kg.
- Timing of transport should be based on patient's clinical condition and the transport policy.
- Never hesitate to contact medical control for patient who refuses transport.
- Orthostatic vital sign procedure should be performed in situations where volume status is in question.



Airway, Adult

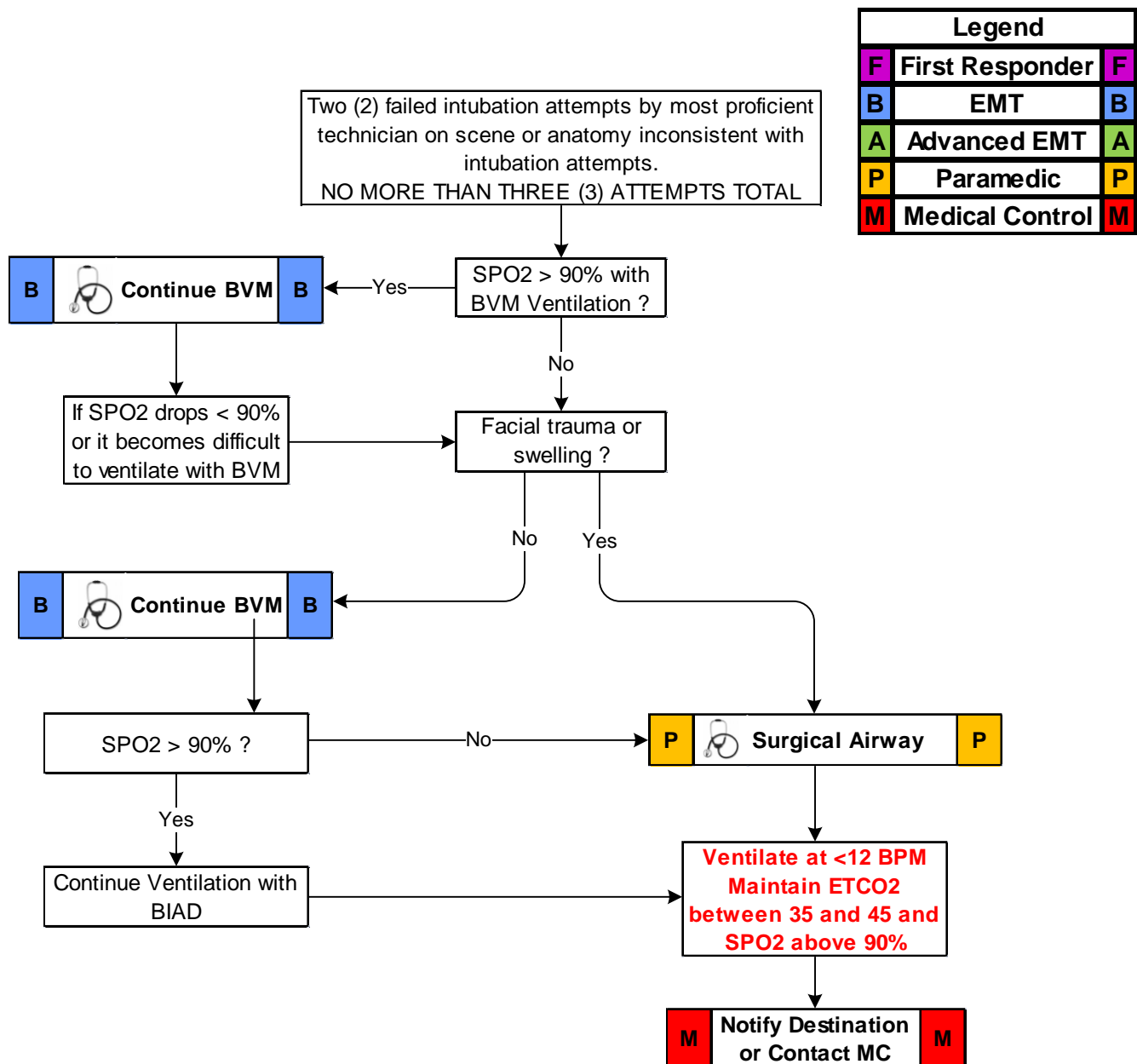


Pearls

- This protocol is only for use in patients with an Age >12 or >55 Kg.
- Capnometry (Color) or capnography is mandatory with all methods of intubation. Document results.
- Continuous capnography (EtCO₂) should be utilized for the monitoring of all patients with a BIAD or endotracheal tube.
- If an effective airway is being maintained by BVM with continuous pulse oximetry values of > 90, it is acceptable to continue with basic airway measures instead of using a BIAD or Intubation.
- For the purposes of this protocol a secure airway is when the patient is receiving appropriate oxygenation and ventilation.
- An Intubation Attempt is defined as passing the laryngoscope blade or endotracheal tube past the teeth or inserted into the nasal passage.
- Ventilatory rate should be 6-10 per minute to maintain a EtCO₂ of 35-45. Avoid hyperventilation.
- It is strongly encouraged to complete an Airway Evaluation Form with any BIAD or Intubation procedure.
- Paramedics should consider using a BIAD if oral-tracheal intubation is unsuccessful.
- Maintain C-spine immobilization for patients with suspected spinal injury.
- Do not assume hyperventilation is psychogenic - use oxygen, not a paper bag.
- Sellick's and or BURP maneuver should be used to assist with difficult intubations.
- Hyperventilation in deteriorating head trauma should only be done to maintain a EtCO₂ of 30-35.
- Gastric tube placement should be considered in all intubated patients if available.
- It is important to secure the endotracheal tube well and consider c-collar to better maintain ETT placement.



Airway, Adult - Failed

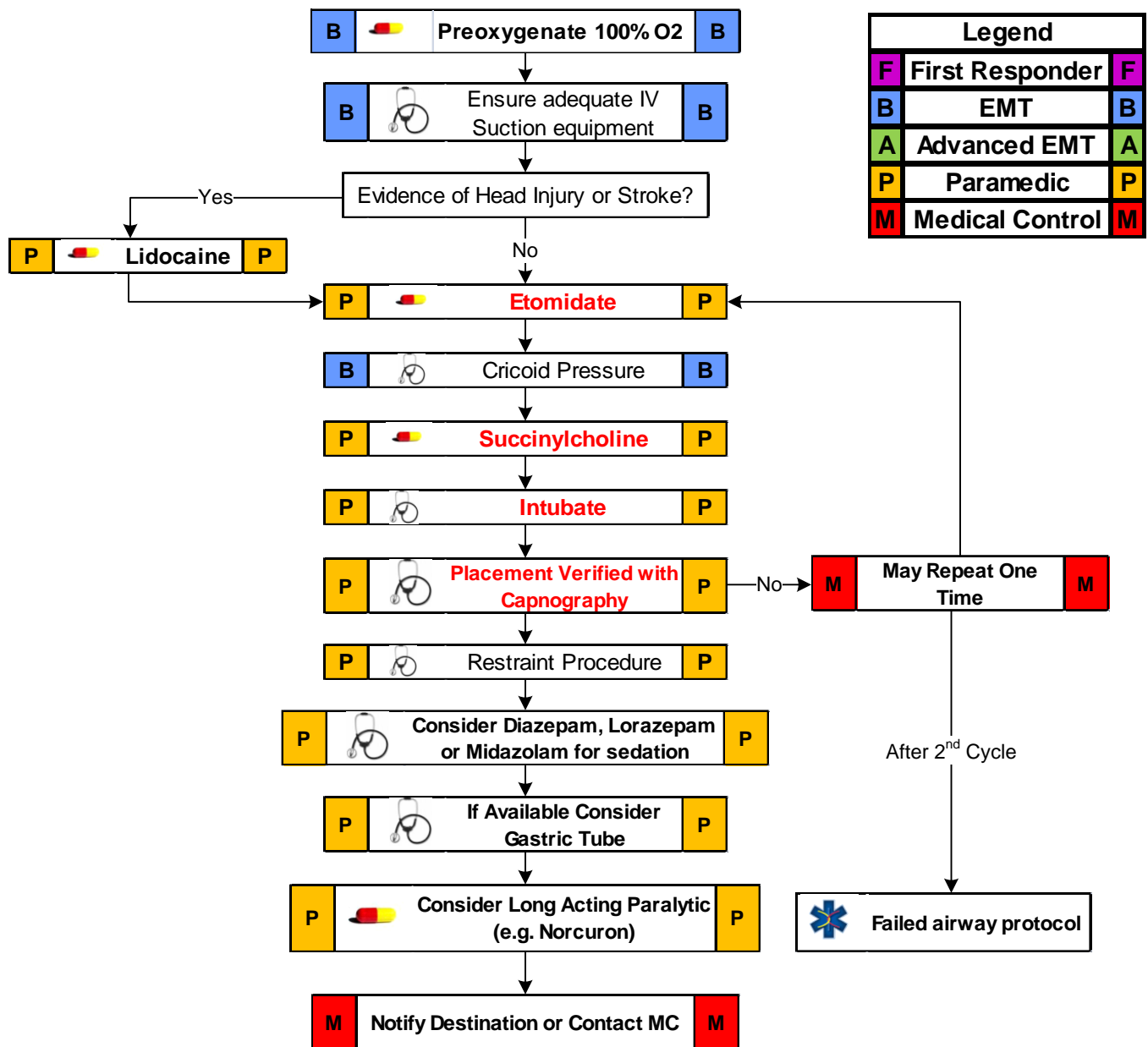


Pearls

- If first intubation attempt fails, make an adjustment and then consider:
 - Different laryngoscope blade
 - Gum Elastic Bougie
 - Different ETT size
 - Change cricoid pressure
 - Apply BURP maneuver (Push trachea Back [posterior], Up, and to patient's Right)
 - Change head positioning
- Continuous pulse oximetry should be utilized in all patients with an inadequate respiratory function.
- Continuous EtCO₂ should be applied to all patients with respiratory failure or to all patients with advanced airways.
- Notify **Medical Control AS EARLY AS POSSIBLE** about the patient's difficult / failed airway.



Airway, Drug Assisted Intubation

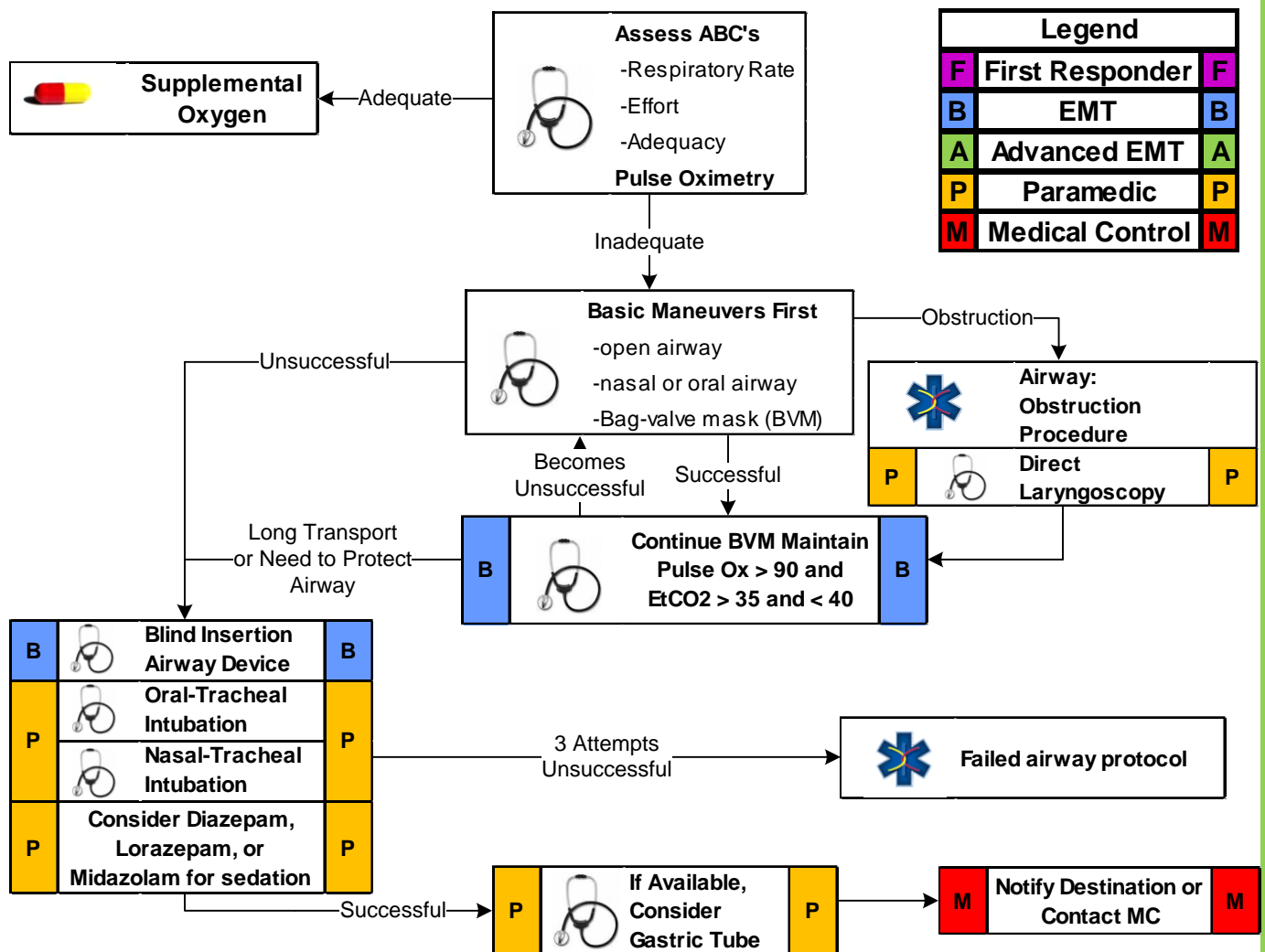


Pearls

- This protocol is only for use in patients with an Age > 12 or > 55 Kg.
- Once a patient has been given a paralytic drug, **YOU ARE RESPONSIBLE FOR VENTILATIONS!**
- Items in Red Text are the key performance indicators used to evaluate protocol compliance. An Airway Evaluation Form must be completed on every patient who receives Drug Assisted Intubation.
- This procedure will take away the patient's airway away so you must be sure of your ability to intubate before giving drugs.
- **Continuous Waveform Capnography and Pulse Oximetry and are required for intubation verification and ongoing patient monitoring**
- Before administering any paralytic drug, screen for contraindications with a thorough neurologic exam.
- If First intubation attempt fails, make an adjustment and try again:
 - Different laryngoscope blade
 - Change head positioning
 - Different ETT size
 - Continuous pulse oximetry should be utilized in all patients.
 - Change cricoid pressure
 - Consider applying BURP maneuver (Back [posterior], Up, and to pt's Right Pressure)
- Divide the workload - ventilate, suction, cricoid pressure, drugs, intubation.
- All equipment must be in place and ready for use prior to administering any RSI drugs.
- Protect the patient from self extubation when the drugs wear off. Longer acting paralytics may be needed post-intubation.



Airway, Pediatric

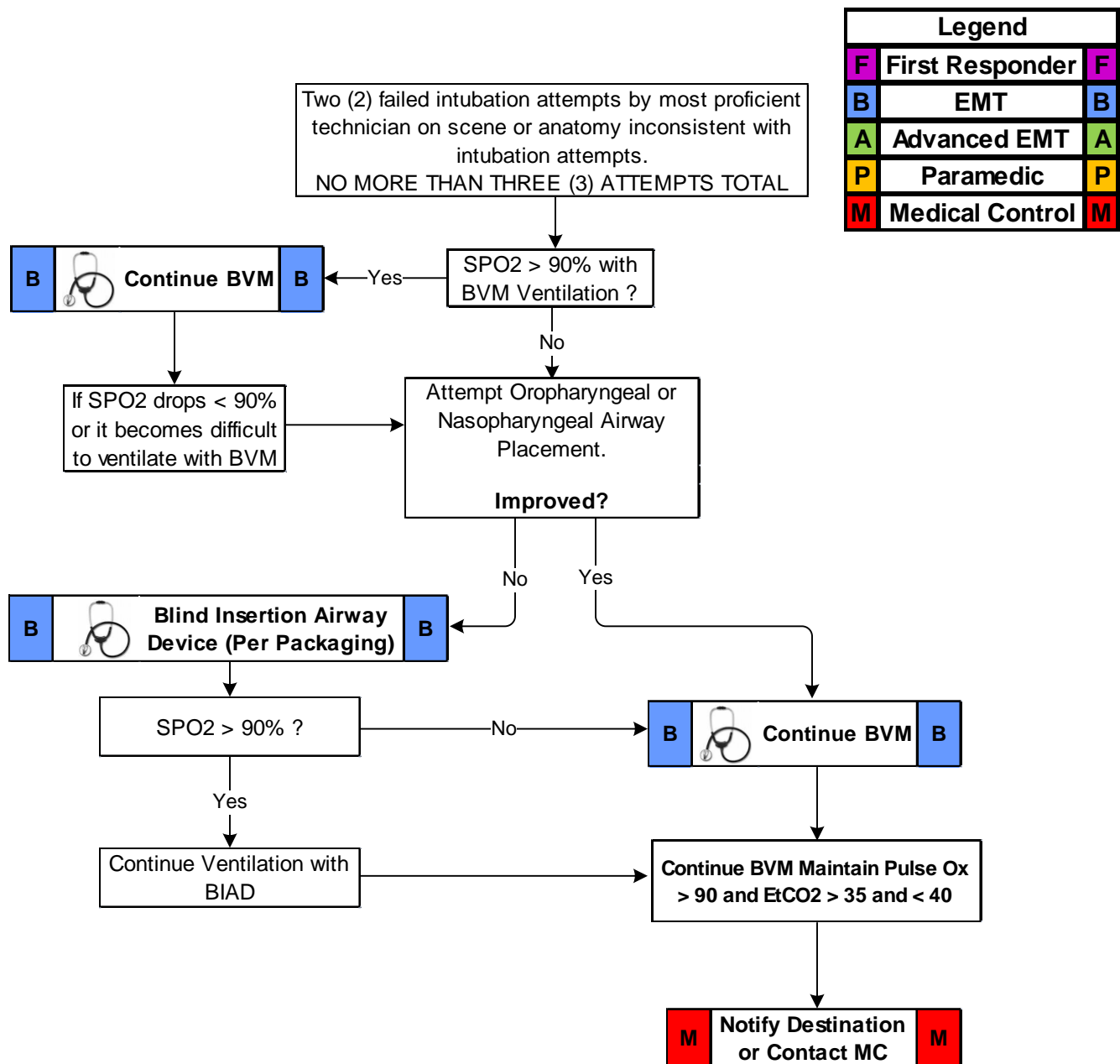


Pearls

- For this protocol, pediatric is defined as < 12 years of age or any patient < 55 Kg.
- Capnography is mandatory with all methods of intubation. Document results.
- **Continuous capnography (EtCO₂) should be utilized with BIAD or endotracheal tube use.**
- **If an effective airway is being maintained by BVM with continuous pulse oximetry values of > 94, it is acceptable to continue with basic airway measures instead of using a BIAD or Intubation.**
- **For the purposes of this protocol a secure airway is when the patient is receiving appropriate oxygenation and ventilation.**
- **An Intubation Attempt is defined as passing the laryngoscope blade or endotracheal tube past the teeth or inserted into the nasal passage.**
- **Ventilatory rate should be 30 for Neonates, 25 for Toddlers, 20 for School Age, and for Adolescents the normal Adult rate of 12 per minute. Maintain a EtCO₂ between 35 and 40 and avoid hyperventilation.**
- **It is strongly encouraged to complete an Airway Evaluation Form with any BIAD or Intubation procedure.**
- Paramedics should consider using a BIAD if oral-tracheal intubation is unsuccessful.
- Maintain C-spine immobilization for patients with suspected spinal injury.
- Do not assume hyperventilation is psychogenic - use oxygen, not a paper bag.
- Sellick's and **or BURP** maneuver should be used to assist with difficult intubations.
- Hyperventilation in deteriorating head trauma should only be done to maintain a EtCO₂ (pCO₂) of 30-35.
- Gastric tube placement should be considered in all intubated patients.
- It is important to secure the endotracheal tube well and consider c-collar to better maintain ETT placement.



Airway, Pediatric - Failed



Pearls

- If first intubation attempt fails, make an adjustment and then try again:
 - Different laryngoscope blade
 - Gum Elastic Bougie
 - Different ETT size
 - Change cricoid pressure
 - Apply BURP maneuver (Push trachea Back [posterior], Up, and to patient's Right)
 - Change head positioning
- Ventilatory rate should be 30 for Neonates, 25 for Toddlers, 20 for School Age, and for Adolescents the normal Adult rate of 12 per minute. Maintain a EtCO2 between 35 and 40 and avoid hyperventilation.**
- Continuous pulse oximetry should be utilized in all patients with an inadequate respiratory function.
- Continuous EtCO2 should be applied to all patients with respiratory failure or to all patients with advanced airways.
- Notify **Medical Control AS EARLY AS POSSIBLE** about the patient's difficult / failed airway.



Back Pain

History

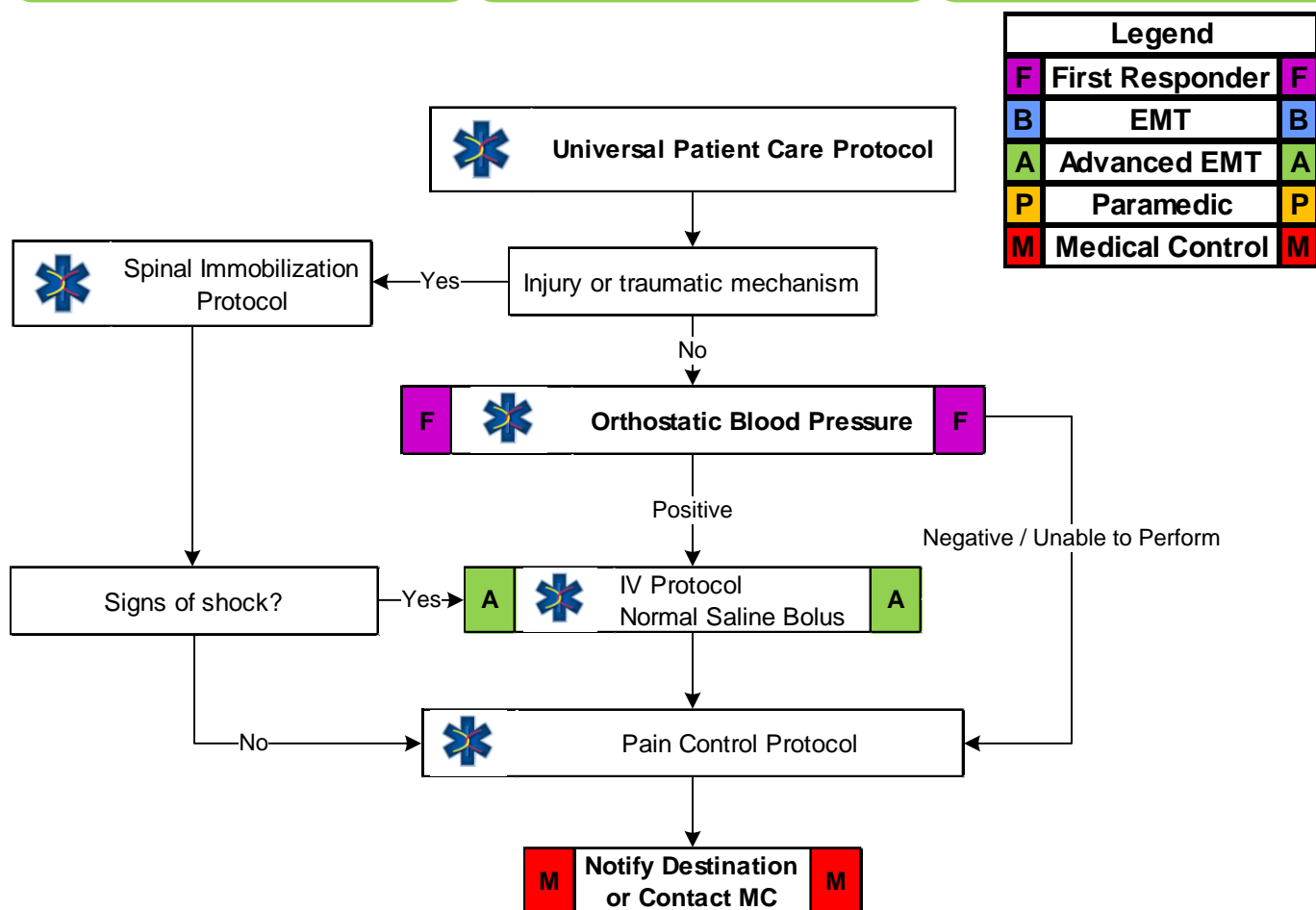
- Age
- Past medical history
- Past surgical history
- Medications
- Onset of pain / injury
- Previous back injury
- Traumatic mechanism
- Location of pain
- Fever
- Improvement or worsening with activity

Signs and Symptoms

- Pain (paraspinous, spinous process)
- Swelling
- Pain with range of motion
- Extremity weakness
- Extremity numbness
- Shooting pain into an extremity
- Bowel / bladder dysfunction

Differential

- Muscle spasm / strain
- Herniated disc with nerve
- Compression
- Sciatica
- Spine fracture
- Kidney stone
- Pyelonephritis
- Aneurysm
- Pneumonia
- Spinal Epidural Abscess
- Metastatic Cancer



Pearls

- **Recommended Exam: Mental Status, HEENT, Neck, Chest, Lungs, Abdomen, Back, Extremities, Neuro**
- Abdominal aneurysms are a concern in patients over the age of 50.
- Kidney stones typically present with an acute onset of flank pain which radiates around to the groin area.
- Patients with midline pain over the spinous processes should be spinally immobilized.
- Any bowel or bladder incontinence is a significant finding which requires immediate medical evaluation.
- In patient with history of IV drug abuse a spinal epidural abscess should be considered.



Behavioral

History

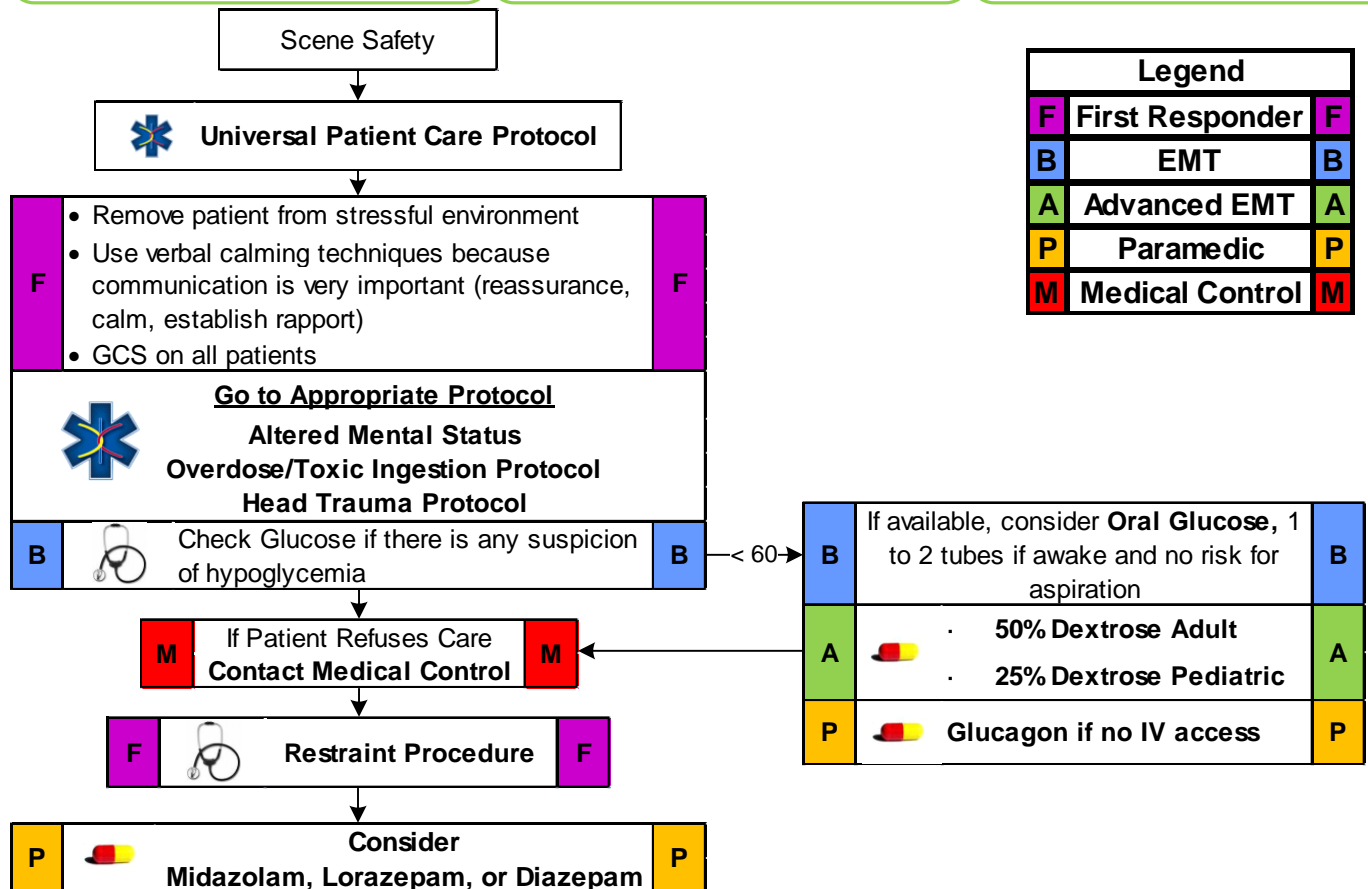
- Situational crisis
- Psychiatric illness
- Medications
- Injury to self or threats to others
- Medic alert tag
- Substance abuse / overdose
- Diabetes

Signs and Symptoms

- Anxiety, agitation, confusion
- Affect change, hallucinations
- Delusional thoughts, bizarre behavior
- Combative violent
- Expression of suicidal / homicidal thoughts

Differential

- **see Altered Mental Status differential**
- **Alcohol Intoxication**
- **Toxin / Substance abuse**
- **Medication effect / overdose**
- **Withdrawal syndromes**
- **Depression**
- **Bipolar (manic-depressive)**
- **Schizophrenia**
- **Anxiety disorders**



Pearls

- **Recommended Exam: Mental Status, Skin, Heart, Lungs, Neuro**
- Your safety first!!
- **Consider Geodon for patients with history of psychosis or a benzodiazepine for patients with presumed substance abuse ONLY with Online Medical Control permission.**
- Be sure to consider all possible medical/trauma causes for behavior (hypoglycemia, overdose, substance abuse, hypoxia, head injury, etc.)
- Do not irritate the patient with a prolonged exam.
- Do not overlook the possibility of associated domestic violence or child abuse.
- If patient is suspected of agitated delirium suffers cardiac arrest, consider a fluid bolus and sodium bicarbonate early.
- **All patients who receive either physical or chemical restraint should be continuously observed by ALS personnel on scene or immediately upon their arrival.**
- Any patient who is handcuffed or restrained by Law Enforcement and transported by EMS must be accompanied by law enforcement in the ambulance.
- Do not position or transport any restrained patient in such a way that could impact the patient's respiratory or circulatory status.



Fever / Infection Control

History

- Age
- Duration of fever
- Severity of fever
- Past medical history
- Medications
- Immunocompromised (transplant, HIV, diabetes, cancer)
- Environmental exposure
- Last acetaminophen or ibuprofen

Signs and Symptoms

- Warm
- Flushed
- Sweaty
- Chills/Rigors

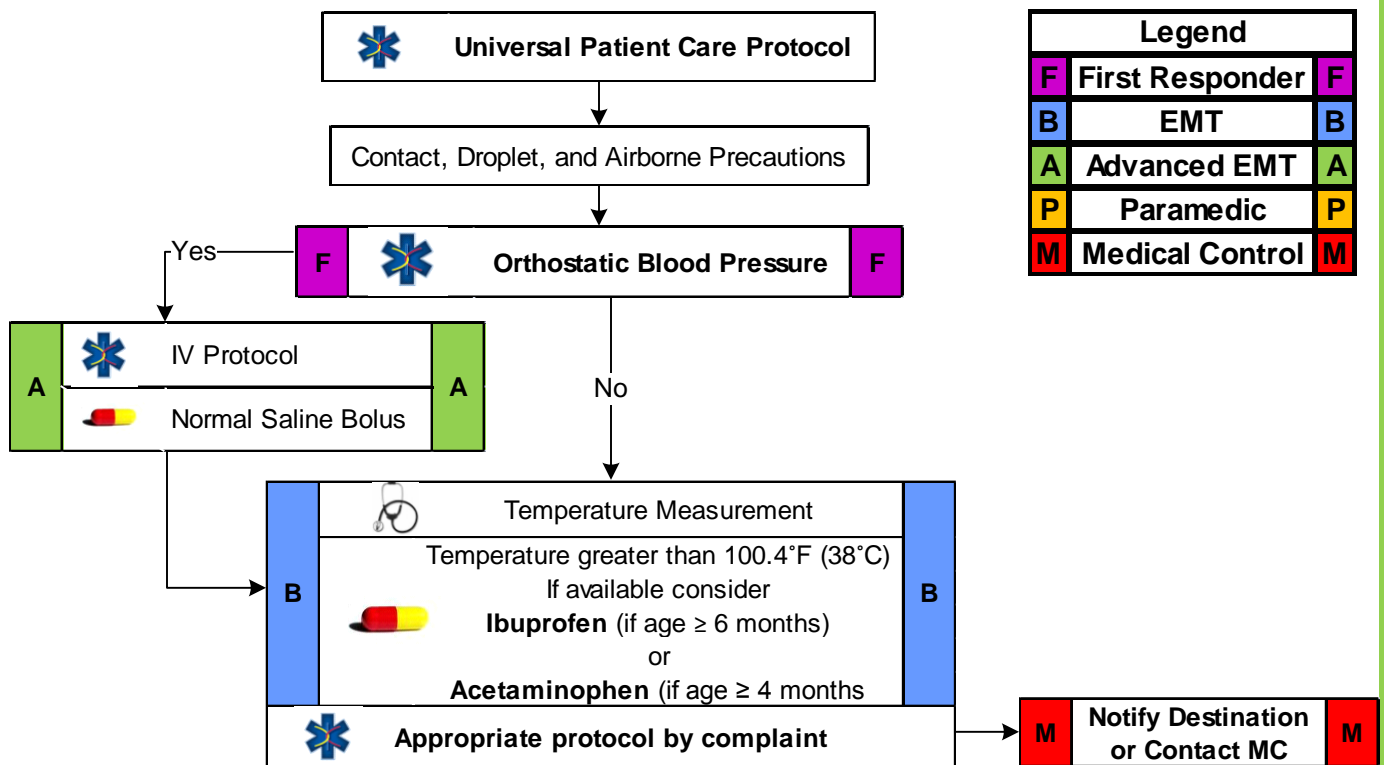
Associated Symptoms

(Helpful to localize source)

- myalgias, cough, chest pain, headache, dysuria, abdominal pain, mental status changes, rash

Differential

- Infections / Sepsis
- Cancer / Tumors / Lymphomas
- Medication or drug reaction
- Connective tissue disease
 - Arthritis
 - Vasculitis
- Hyperthyroidism
- Heat Stroke
- Meningitis

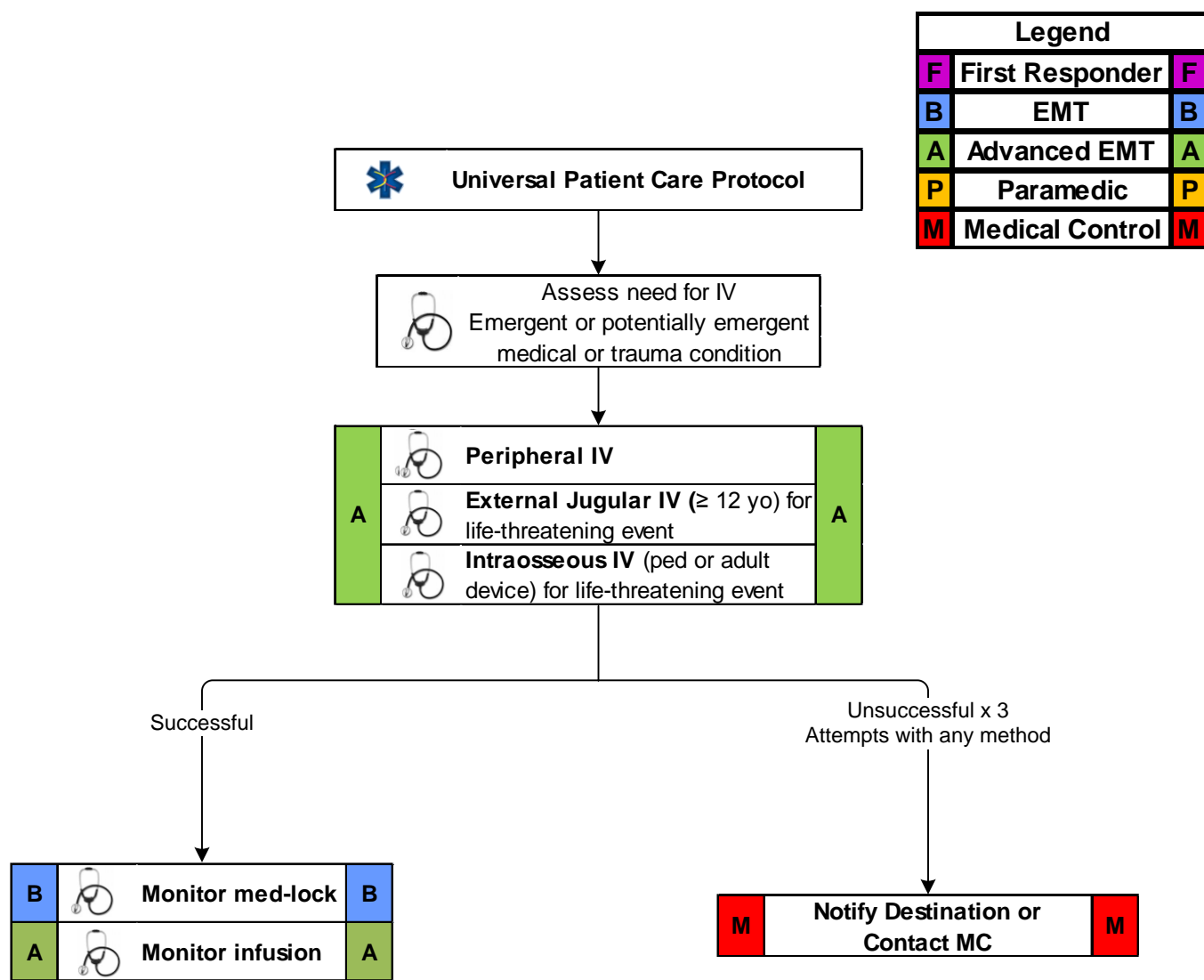


Pearls

- **Recommended Exam: Mental Status, Skin, HEENT, Neck, Heart, Lungs, Abdomen, Back, Extremities, Neuro**
- Febrile seizures are more likely in children with a history of febrile seizures and with a rapid elevation in temperature.
- Patients with a history of Liver failure should not receive acetaminophen.
- **Droplet precautions** include standard PPE plus a standard surgical mask for providers who accompany patients in the back of the ambulance and a surgical mask or NRB O2 mask for the patient. This level of precaution should be utilized when influenza, meningitis, mumps, streptococcal pharyngitis, and other illnesses spread via large particle droplets are suspected. A patient with a potentially infectious rash should be treated with droplet precautions.
- **Airborne precautions** include standard PPE plus utilization of a gown, change of gloves after every patient contact, and strict hand washing precautions. This level of precaution is utilized when multi-drug resistant organisms (e.g. MRSA), scabies, or zoster (shingles), or other illnesses spread by contact are suspected.
- **All-hazards precautions** include standard PPE plus airborne precautions plus contact precautions. This level of precaution is utilized during the initial phases of an outbreak when the etiology of the infection is unknown or when the causative agent is found to be highly contagious (e.g. SARS).
- Rehydration with fluids increased the patients ability to sweat and improves heat loss.
- All patients should have drug allergies documented prior to administering pain medications.
- Allergies to NSAID's (non-steroidal anti-inflammatory medications) are a contraindication to Ibuprofen.
- NSAID's should not be used in the setting of environmental heat emergencies.
- **Do not** give aspirin to a child.
- **Pediatric Dosing: Tylenol (Acetaminophen) 15 mg/kg ; Ibuprofen 10 mg/kg**



IV Access



Pearls

- In the setting of cardiac arrest, any preexisting dialysis shunt or external central venous catheter may be used.
- Intraosseous with the appropriate adult or pediatric device.
- External jugular (> 12 years of age).
- Any prehospital fluids or medications approved for IV use, may be given through an intraosseous IV.
- All IV rates should be at KVO (minimal rate to keep vein open) unless administering fluid bolus.
- External jugular lines can be attempted initially in life-threatening events where no obvious peripheral site is noted.
- In patients who are hemodynamically unstable or in extremis, ATTEMPT to **contact medical control** prior to accessing dialysis shunts or external central venous catheters.
- Any venous catheter which has already been accessed prior to EMS arrival may be used.
- Upper extremity IV sites are preferable to lower extremity sites.
- Lower extremity IV sites are discouraged in patients with vascular disease or diabetes.
- In post-mastectomy patients, avoid IV, blood draw, injection, or blood pressure in arm on affected side.



Pain Control: Adult

History

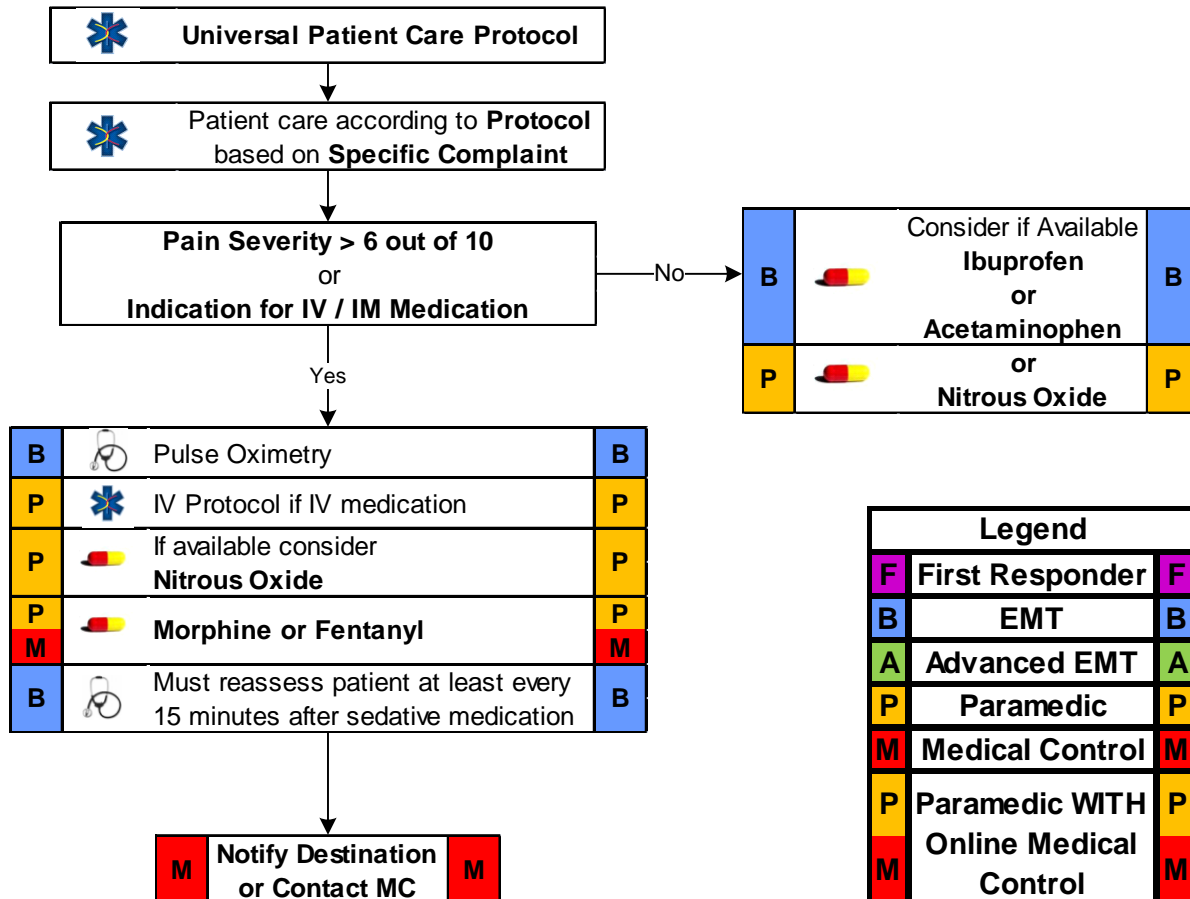
- Age
- Location
- Duration
- Severity (1 - 10)
- Past medical history
- Medications
- Drug allergies

Signs and Symptoms

- Severity (pain scale)
- Quality (sharp, dull, etc.)
- Radiation
- Relation to movement,
- Respiration
- Increased with palpation of area

Differential

- **Per the specific protocol**
- **Musculoskeletal**
- **Visceral (abdominal)**
- **Cardiac**
- **Pleural / Respiratory**
- **Neurogenic**
- **Renal (colic)**



Pearls

- **Recommended Exam: Mental Status, Area of Pain, Neuro**
- **Pain severity (0-10) is a vital sign to be recorded pre and post IV or IM medication delivery and at disposition.**
- **Vital signs should be obtained pre, 15 minutes post, and at disposition with all pain medications.**
- Contraindications to the use of a **narcotic** include hypotension, head injury, respiratory distress or severe COPD.
- **Ibuprofen should not be used in patients with known renal disease or renal transplant, in patients who have known drug allergies to NSAID's (non-steroidal anti-inflammatory medications), with active bleeding, or in patients who may need surgical intervention such as open fractures or fracture deformities.**
- All patients should have drug allergies documented prior to administering pain medications.
- All patients who receive IM or IV medications must be observed 15 minutes for drug reaction.
- **Ibuprofen** should not be given for headaches or abdominal pain, history of gastritis, stomach ulcers, fracture, or if patient will require sedation.
- Do not administer any PO medications for patients who may need surgical intervention such as open fractures or fracture deformities, headaches, or abdominal pain.
- Do not administer **Acetaminophen** to patients with a history of liver disease.
- See drug list for other contraindications for Narcotics, Acetaminophen, Nitrous Oxide, and Ibuprofen.



Pain Control: Pediatric

History

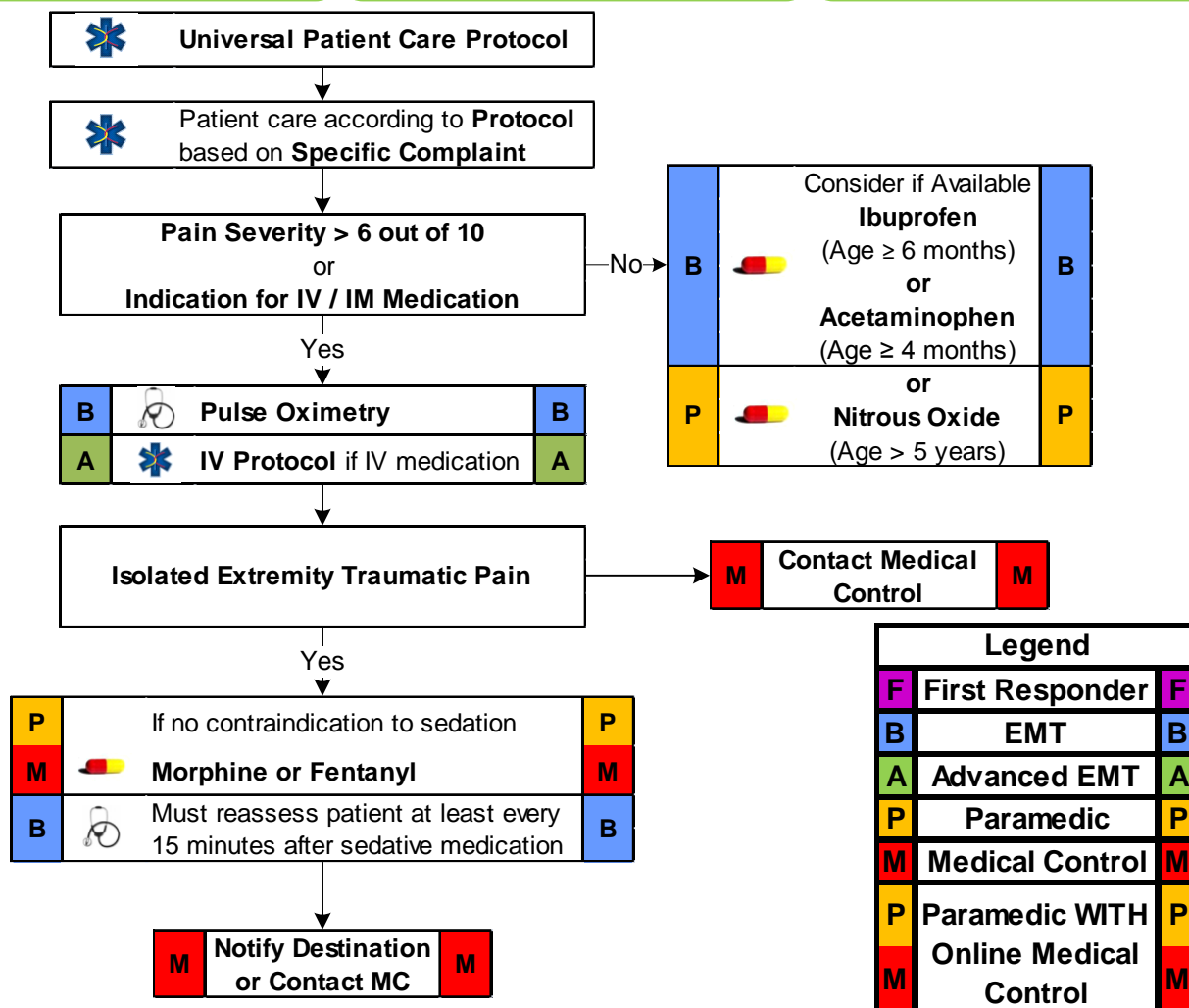
- Age
- Location
- Duration
- Severity (1 - 10)
- If child use Wong-Baker faces scale
- Past medical history
- Medications
- Drug allergies

Signs and Symptoms

- Severity (pain scale)
- Quality (sharp, dull, etc.)
- Radiation
- Relation to movement,
- Respiration
- Increased with palpation of area

Differential

- Per the specific protocol
- Musculoskeletal
- Visceral (abdominal)
- Cardiac
- Pleural / Respiratory
- Neurogenic
- Renal (colic)

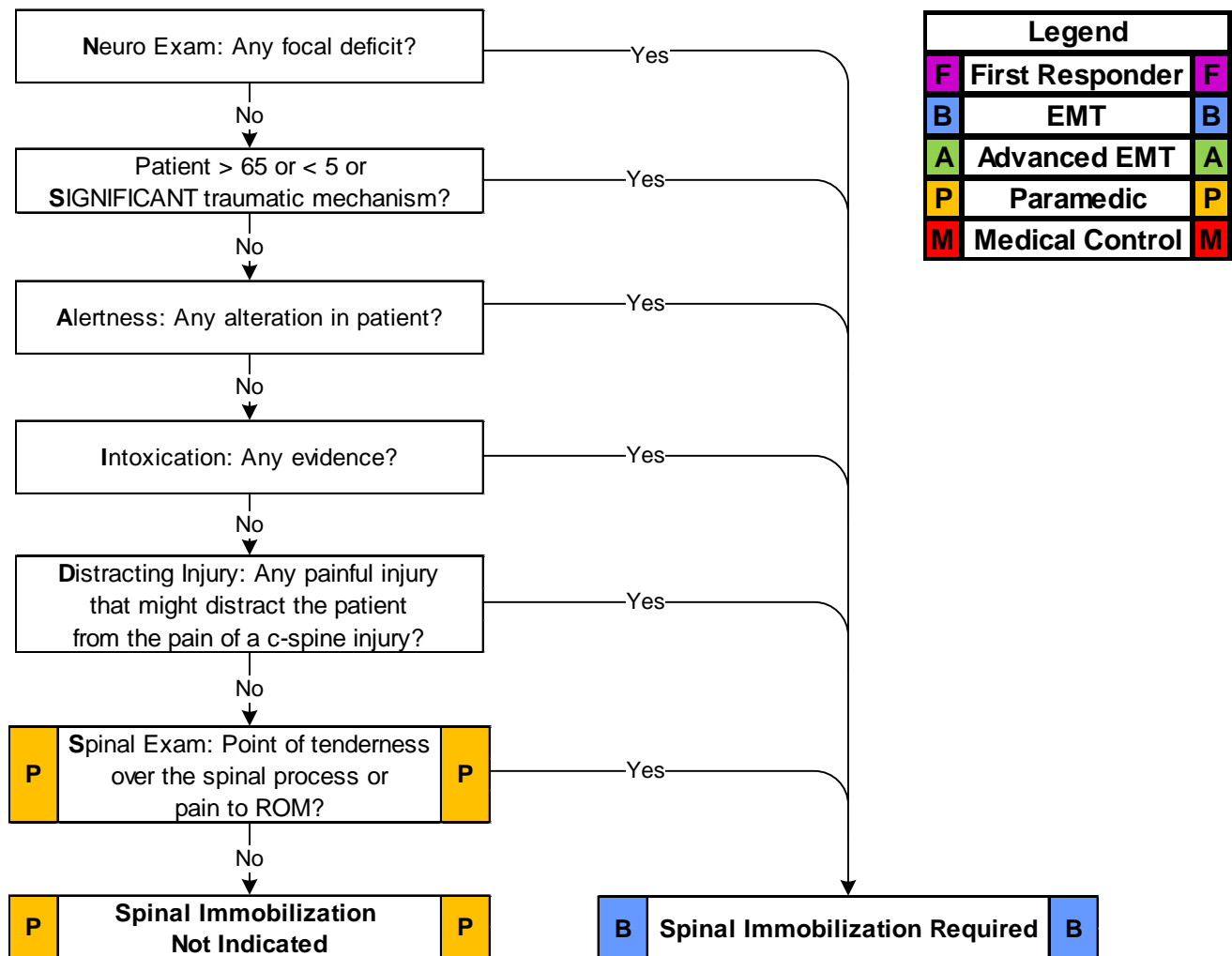


Pearls

- **Recommended Exam: Mental Status, Area of Pain, Neuro**
- Pain severity (0-10) is a vital sign to be recorded pre and post IV or IM medication delivery and at disposition.
- For children use Wong-Baker faces scale or the FLACC score (see Assessment Pain Procedure)
- Vital signs should be obtained pre, 15 minutes post, and at disposition with all pain medications.
- **Contraindications to Narcotic use** include hypotension, head injury, or respiratory distress.
- All patients should have drug allergies documented and avoid medications with a history of an allergy or reaction.
- All patients who receive IM or IV medications must be observed 15 minutes for drug reaction.
- **Ibuprofen** should not be given if there is abdominal pain, history of gastritis, stomach ulcers, fracture, or if patient will require sedation.
- Do not administer any PO medications for patients who may need surgical intervention such as open fractures or fracture deformities.
- See drug list for other contraindications for Narcotics, Nitrous Oxide, Acetaminophen, and Ibuprofen.
- **Pediatric Dosing: Tylenol (Acetaminophen) 15 mg/kg ; Ibuprofen 10 mg/kg**



Spinal Immobilization Clearance



Pearls

- **Recommended Exam: Mental Status, Skin, Neck, Heart, Lungs, Abdomen, Back, Extremities, Neuro**
- **Consider immobilization in any patient with arthritis, cancer, or other underlying spinal or bone disease.**
- Significant mechanism includes high-energy events such as ejection, high falls, and abrupt deceleration crashes and may indicate the need for spinal immobilization in the absence of symptoms.
- Range of motion should NOT be assessed if patient has midline spinal tenderness. Patient's range of motion should not be assisted. The patient should touch their chin to their chest, extend their neck (look up), and turn their head from side to side (shoulder to shoulder) without spinal process pain.
- The acronym "NSAIDS" should be used to remember the steps in this protocol.
- **"N"** = Neurologic exam. Look for focal deficits such as tingling, reduced strength, or numbness in an extremity.
- **"S"** = Significant mechanism or extremes of age.
- **"A"** = Alertness. Is patient oriented to person, place, time, and situation? Any change to alertness with this incident?
- **"I"** = Intoxication. Is there any indication that the person is intoxicated (impaired decision making ability)?
- **"D"** = Distracting injury. Is there any other injury which is capable of producing significant pain in this patient?
- **"S"** = Spinal exam. Look for point tenderness in any spinal process or spinal process tenderness with range of motion.



Police Custody

History

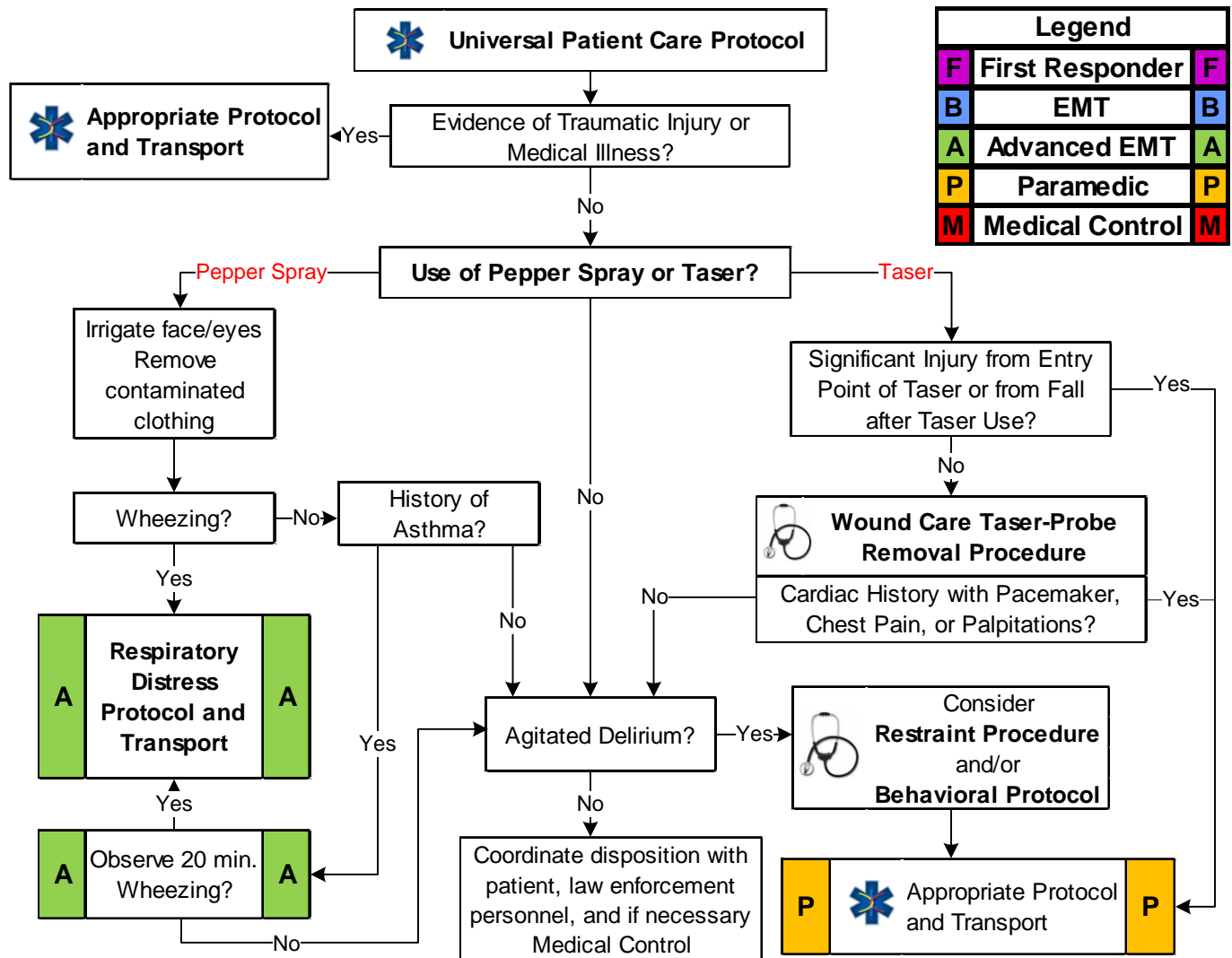
- Traumatic Injury
- Drug Abuse
- Cardiac History
- History of Asthma
- Psychiatric History

Signs and Symptoms

- External signs of trauma
- Palpitations
- Shortness of breath
- Wheezing
- Altered Mental Status
- Intoxication/Substance Abuse

Differential

- Agitated Delirium Secondary to Psychiatric Illness
- Agitated Delirium Secondary to Substance Abuse
- Traumatic Injury
- Closed Head Injury
- Asthma Exacerbation
- Cardiac Dysrhythmia



General Protocols

Pearls

- **For this protocol to be used, the patient does not have to be under police custody.**
- Agitated delirium is characterized by marked restlessness, irritability, and/or high fever. Patients exhibiting these signs are at high risk for sudden death and should be transported to hospital by ALS personnel.
- Patients restrained by law enforcement devices cannot be transported in the ambulance without a law enforcement officer in the patient compartment who is capable of removing the devices.
- If there is any doubt about the cause of a patient's alteration in mental status, transport the patient to the hospital for evaluation.
- If an asthmatic patient is exposed to pepper spray and released to law enforcement, all parties should be advised to immediately recontact EMS if wheezing/difficulty breathing occurs.
- All patients in police custody retain the right to request transport. This should be coordinated with law enforcement.
- If extremity/chemical/law enforcement restraints are applied, complete Restraint procedure in call reporting system.



Abdominal Pain

History

- Age
- Past medical / surgical history
- Medications
- Onset
- Palliation / Provocation
- Quality (crampy, constant, sharp, dull, etc.)
- Region / Radiation / Referred
- Severity (1-10)
- Time (duration / repetition)
- Fever
- Last meal eaten
- Last bowel movement / emesis
- Menstrual history (pregnancy)

Signs and Symptoms

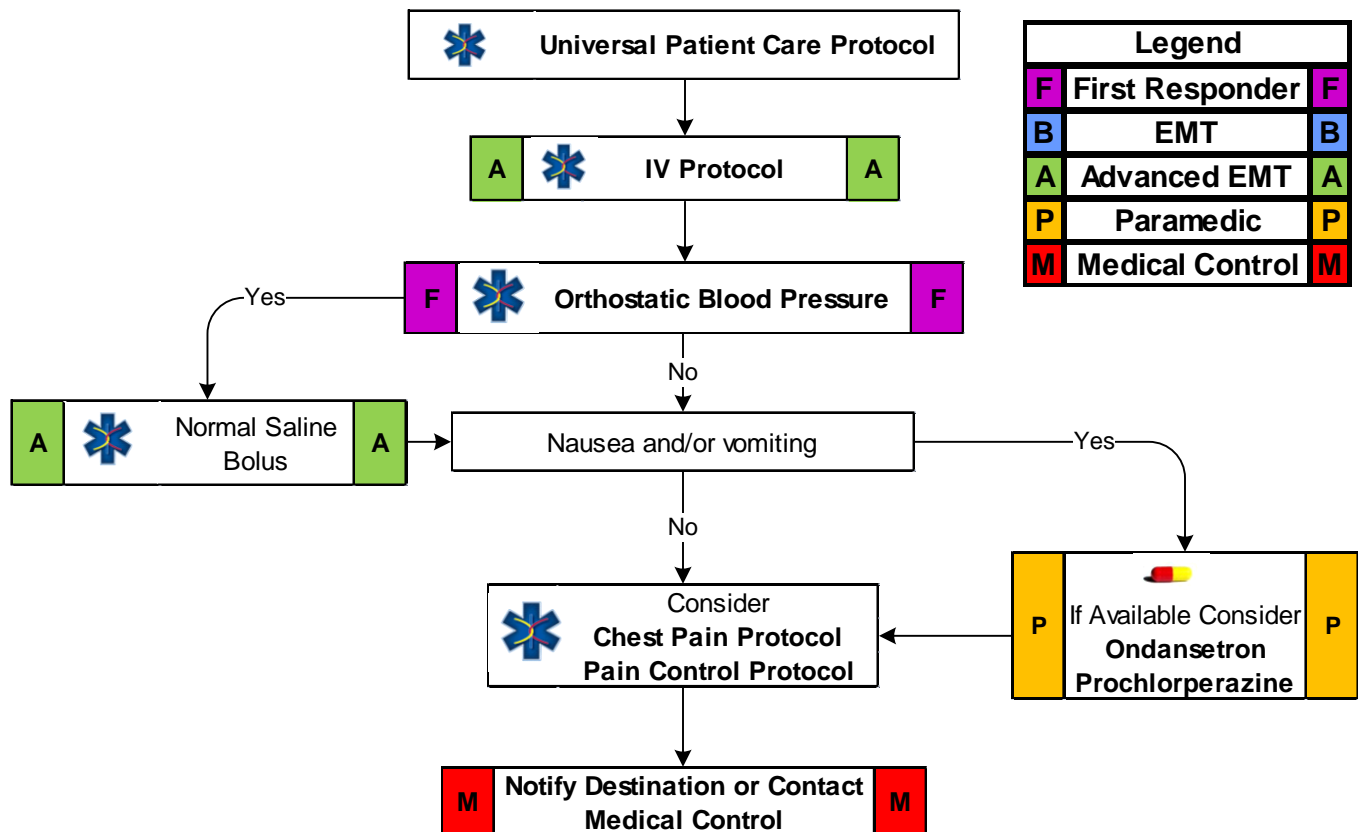
- Pain (location / migration)
- Tenderness
- Nausea
- Vomiting
- Diarrhea
- Dysuria
- Constipation
- Vaginal bleeding / discharge
- Pregnancy

Associated symptoms: (Helpful to localize source)

Fever, headache, weakness, malaise, myalgias, cough, headache, mental status changes, rash

Differential

- Pneumonia or Pulmonary embolus
- Liver (hepatitis, CHF)
- Peptic ulcer disease / Gastritis
- Gallbladder
- Myocardial infarction
- Pancreatitis
- Kidney stone
- Abdominal aneurysm
- Appendicitis
- Bladder / Prostate disorder
- Pelvic (PID, Ectopic pregnancy, Ovarian cyst)
- Spleen enlargement
- Diverticulitis
- Bowel obstruction
- Gastroenteritis (infectious)



Pearls

- **Recommended Exam: Mental Status, Skin, HEENT, Neck, Heart, Lung, Abdomen, Back, Extremities, Neuro**
- Document the mental status and vital signs prior to administration of anti-emetics.
- Abdominal pain in women of childbearing age should be treated as an ectopic pregnancy until proven otherwise.
- Antacids should be avoided in patients with renal disease.
- The diagnosis of abdominal aneurysm should be considered with abdominal pain in patients over 50.
- Repeat vital signs after each bolus.
- Appendicitis may present with vague, peri-umbilical pain which migrates to the RLQ over time.
- Prochlorperazine = Compazine; Ondansetron = Zofran



Anaphylaxis / Allergic Reaction

History

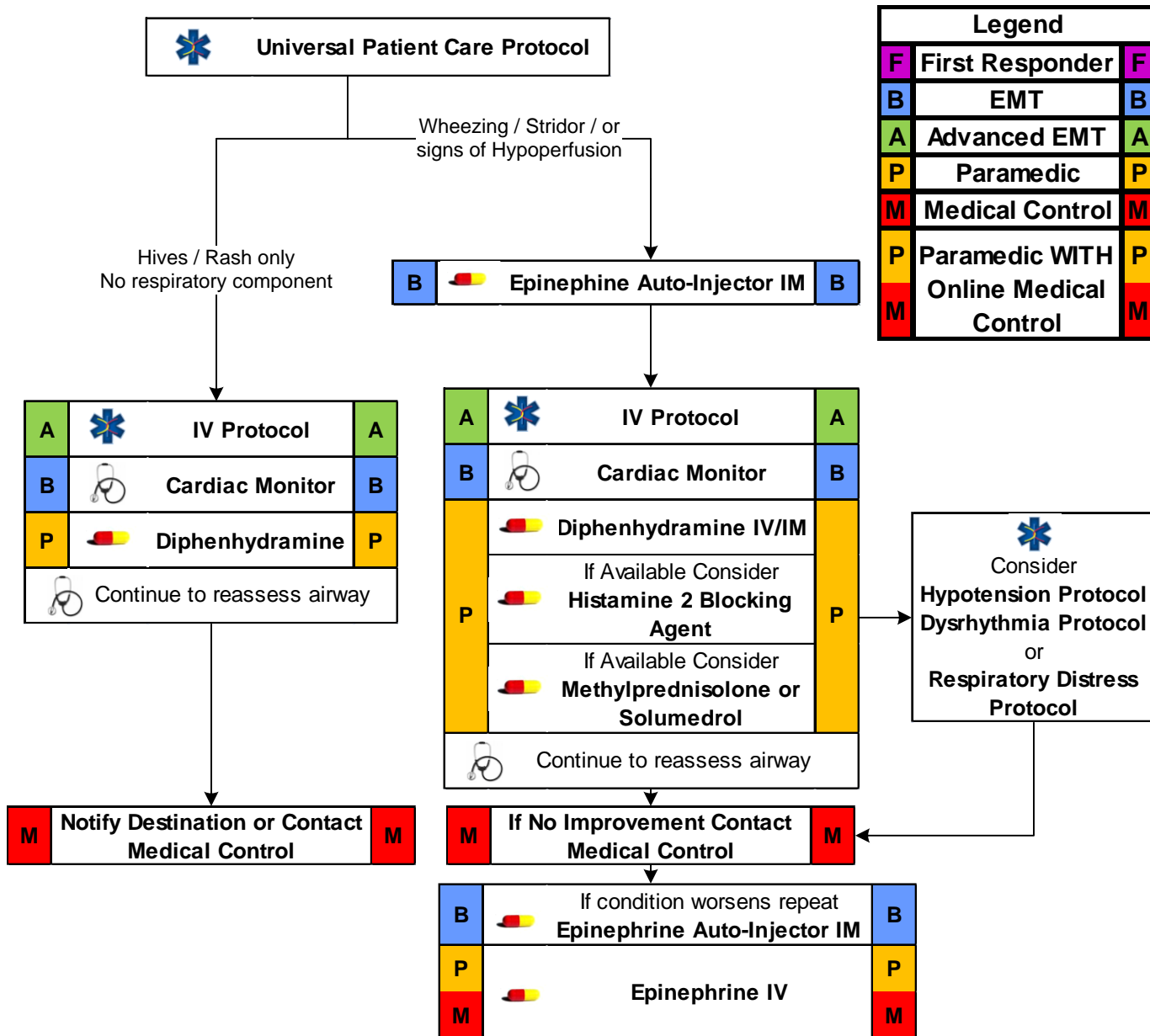
- Onset and location
- Insect sting or bite
- Food allergy / exposure
- Medication allergy / exposure
- New clothing, soap, detergent
- Past history of reactions
- Past medical history
- Medication history

Signs and Symptoms

- Itching or hives
- Coughing / wheezing or
- Respiratory distress
- Chest or throat constriction
- Difficulty swallowing
- Hypotension or shock
- Edema

Differential

- Urticaria (rash only)
- Anaphylaxis (systemic effect)
- Shock (vascular effect)
- Angioedema (drug induced)
- Aspiration / Airway obstruction
- Vasovagal event
- Asthma or COPD
- CHF



Pearls

- **Recommended Exam: Mental Status, Skin, Heart, Lungs**
- **Contact Medical Control** prior to administering epinephrine in patients who are >50 years of age, have a history of cardiac disease, or if the patient's heart rate is >150. Epinephrine may precipitate cardiac ischemia. These patients should receive a 12 lead ECG.
- **Any patient with respiratory symptoms or extensive reaction should receive IV or IM diphenhydramine.**
- The shorter the onset from exposure to symptoms, the more severe the reaction.



Altered Mental Status

History

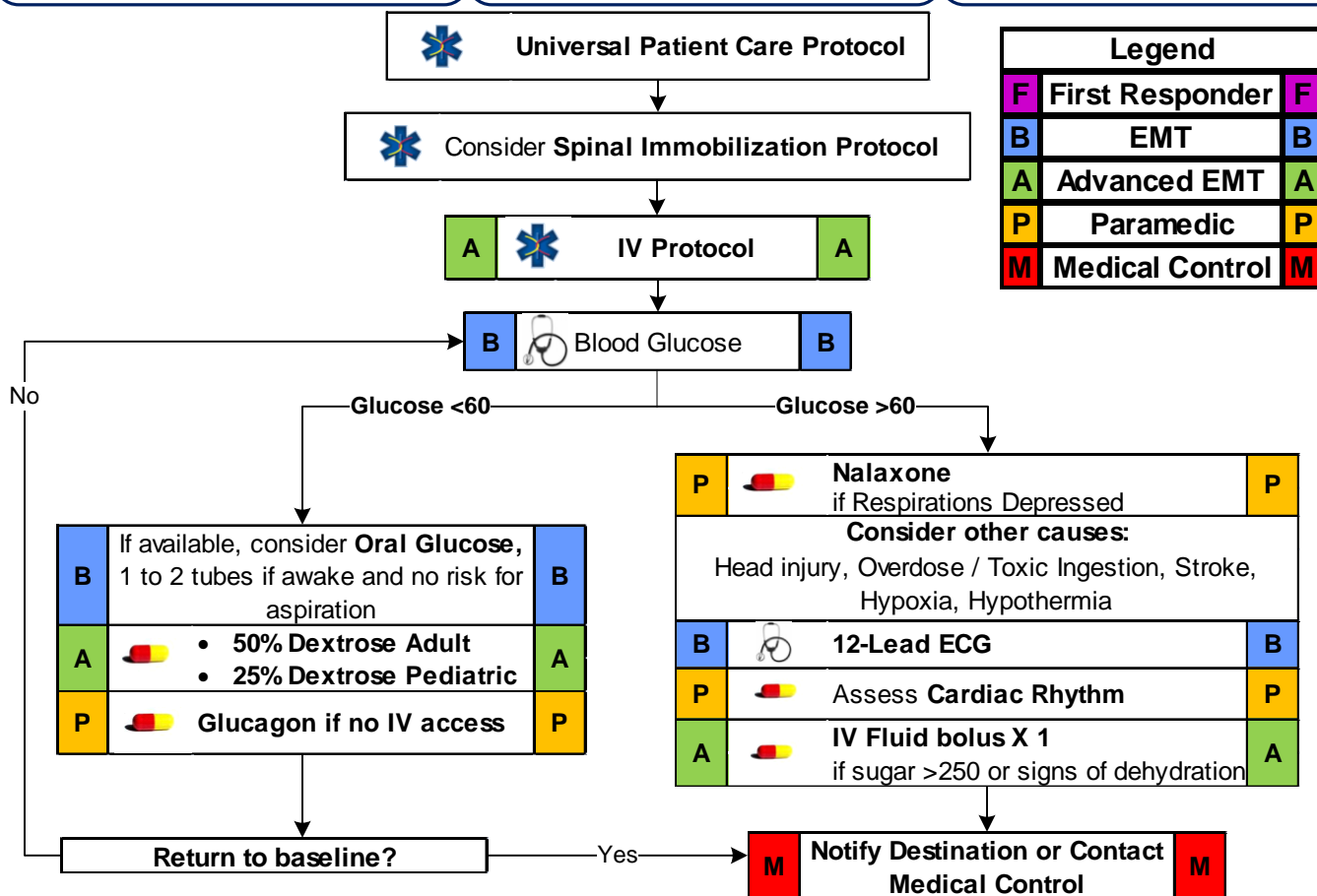
- Known diabetic, medic alert tag
- Drugs, drug paraphernalia
- Report of illicit drug use or toxic ingestion
- Past medical history
- Medications
- History of trauma
- Change in condition
- Changes in feeding or sleep habits

Signs/Symptoms

- Decreased mental status or lethargy
- Change in baseline mental status
- Bizarre behavior
- Hypoglycemia (cool, diaphoretic skin)
- Hyperglycemia (warm, dry skin; fruity breath; Kussmaul resps; signs of dehydration)
- Irritability

Differential

- Head trauma
- CNS (stroke, tumor, seizure, infection)
- Cardiac (MI, CHF)
- Hypothermia / Hyperthermia
- Infection (CNS and other)
- Thyroid (hyper / hypo)
- Shock (septic, metabolic, traumatic)
- Diabetes (hyper / hypoglycemia)
- Toxicologic or Ingestion
- Acidosis / Alkalosis
- Environmental exposure
- Pulmonary (Hypoxia)
- Electrolyte abnormality
- Psychiatric disorder



Pearls

- **Recommended Exam: Mental Status, HEENT, Skin, Heart, Lungs, Abdomen, Back, Extremities, Neuro. Pay careful attention to the head exam for signs of bruising or other injury.**
- Be aware of AMS as presenting sign of an environmental toxin or Haz-Mat exposure and protect personal safety.
- It is safer to assume hypoglycemia than hyperglycemia if doubt exists. Recheck blood glucose after Dextrose or Glucagon.
- Do not let alcohol confuse the clinical picture. Alcoholics frequently develop hypoglycemia and may have unrecognized injuries.
- Low glucose (< 60), normal glucose (60 - 120), high glucose (> 250).
- Consider Restraints if necessary for patient's and/or personnel's protection per the restraint procedure.



Asystole

History

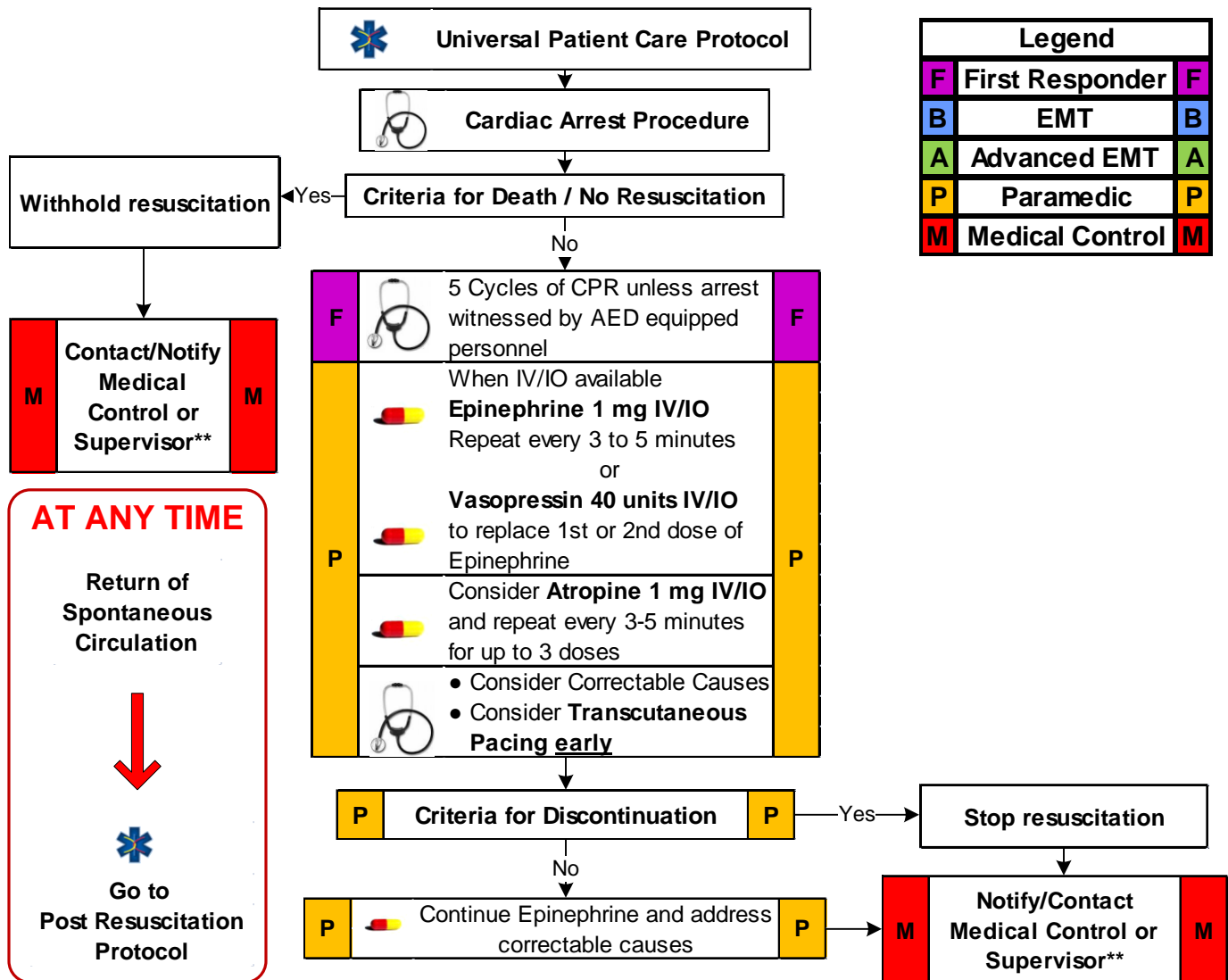
- Past medical history
- Medications
- Events leading to arrest
- End stage renal disease
- Estimated downtime
- Suspected hypothermia
- Suspected overdose
- DNR form

Signs and Symptoms

- Pulseless
- Apneic
- No electrical activity on ECG
- No auscultated heart tones

Differential

- Medical or Trauma
- Hypoxia
- Potassium (hypo / hyper)
- Drug overdose
- Acidosis
- Hypothermia
- Device (lead) error
- Death



Pearls

- **Recommended Exam: Mental Status, Heart, Lungs**
- Always confirm asystole in more than one lead.
- Consider Calcium Gluconate in Dialysis patient.
- Successful resuscitation of Asystole requires the identification and correction of a cause. Causes of Asystole include:
 - Acidosis
 - Hypovolemia
 - Hyperkalemia
 - Tension Pneumothorax
 - Hypoglycemia
 - Overdose (Narcotics, Tricyclic Antidepressants, Calcium Channel Blockers, Beta Blockers)

**Contact Supervisor Based on Local Policy and Written Protocol to Withhold Resuscitation.



Bradycardia

History

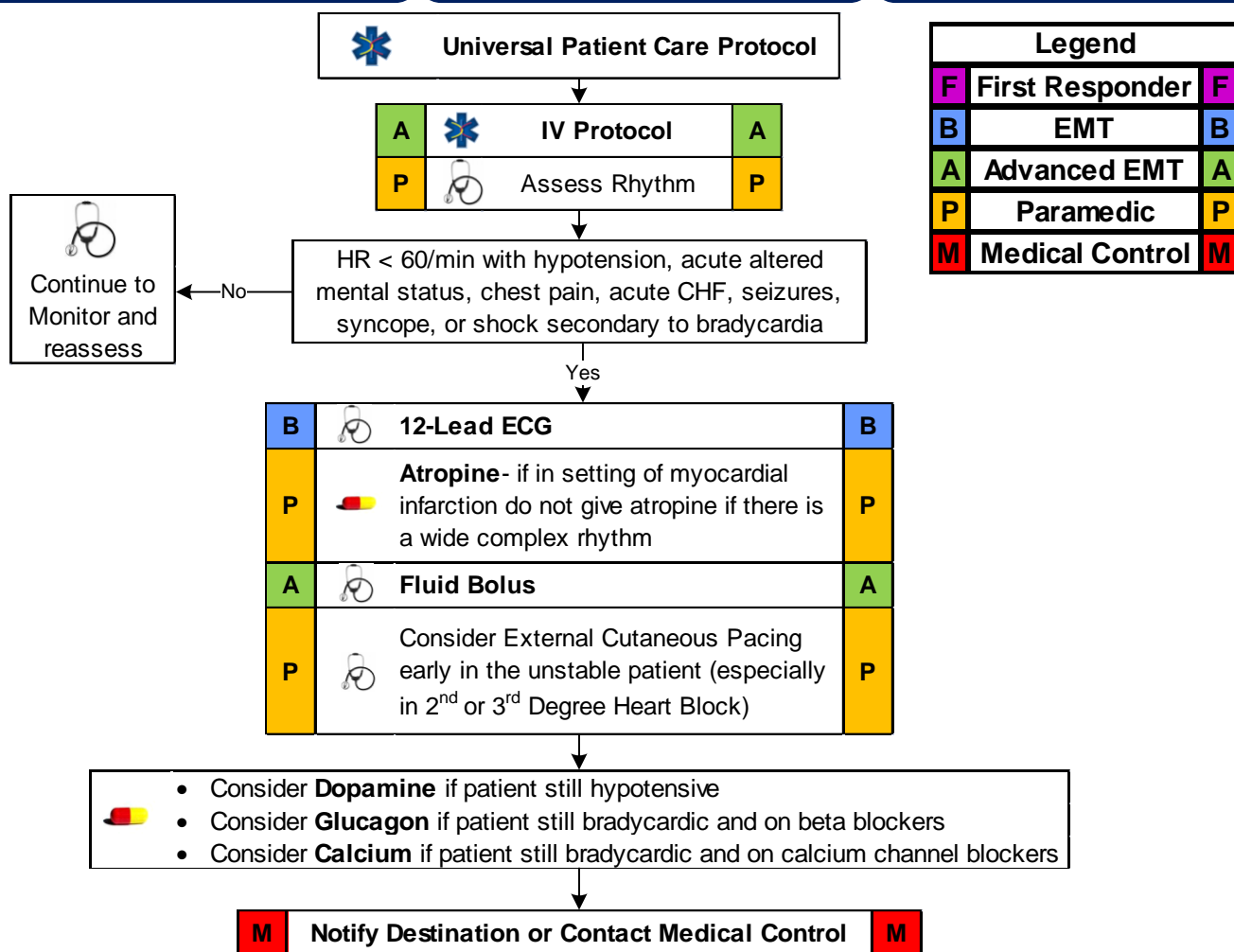
- Past medical history
- Medications
 - Beta-Blockers
 - Calcium channel blockers
 - Clonidine
 - Digoxin
- Pacemaker

Signs and Symptoms

- HR < 60/min with hypotension, acute altered mental status, chest pain, acute CHF, seizures, syncope, or shock secondary to bradycardia
- Chest pain
- Respiratory distress
- Hypotension or Shock
- Altered mental status
- Syncope

Differential

- Acute myocardial infarction
- Hypoxia
- Pacemaker failure
- Hypothermia
- Sinus bradycardia
- Athletes
- Head injury (elevated ICP) or Stroke
- Spinal cord lesion
- Sick sinus syndrome
- AV blocks (1°, 2°, or 3°)
- Overdose



Pearls

- **Recommended Exam: Mental Status, Neck, Heart, Lungs, Neuro**
- The use of Lidocaine, Beta Blockers, and Calcium Channel Blockers in heart block can worsen Bradycardia and lead to asystole and death.
- Pharmacological treatment of Bradycardia is based upon the presence or absence of symptoms. **If symptomatic treat, if asymptomatic, monitor only.**
- In wide complex slow rhythm consider hyperkalemia.
- Remember: The use of Atropine for PVCs in the presence of a MI may worsen heart damage.
- Consider treatable causes for Bradycardia (Beta Blocker OD, Calcium Channel Blocker OD, etc.)
- Be sure to aggressively oxygenate the patient and support respiratory effort.



Cardiac Arrest

History:

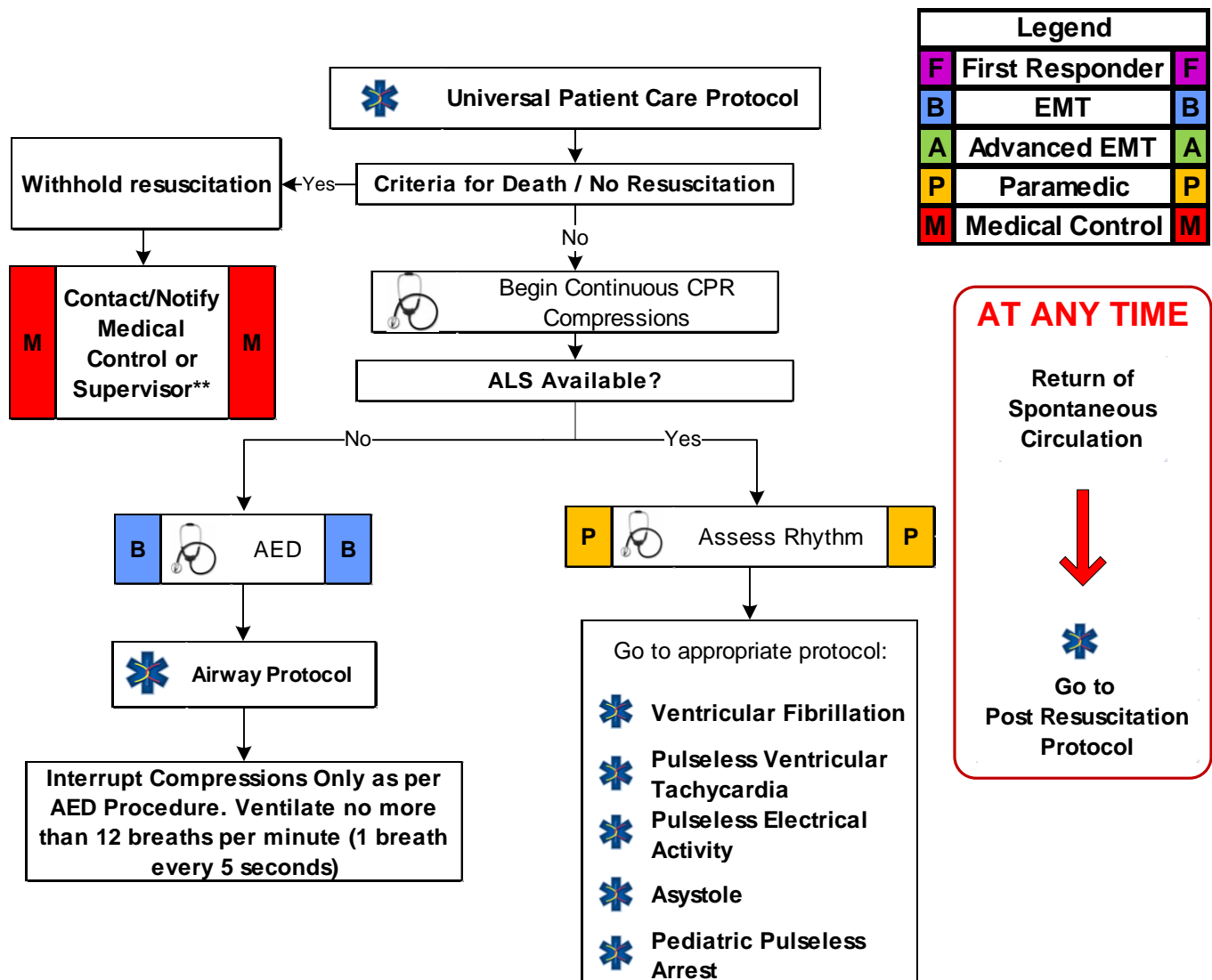
- Events leading to arrest
- Estimated downtime
- Past medical history
- Medications
- Existence of terminal illness
- Signs of lividity, rigor mortis
- DNR form

Signs and Symptoms:

- Unresponsive
- Apneic
- Pulseless

Differential:

- Medical vs Trauma
- V. fib vs Pulseless V. tach
- Asystole
- Pulseless electrical activity (PEA)



Pearls

- **Recommended Exam: Mental Status**
- Success is based on proper planning and execution. Procedures require space and patient access. Make room to work.
- Reassess airway frequently and with every patient move.
- **Maternal Arrest** - Treat mother per appropriate protocol with immediate notification to Medical Control and rapid transport.
- **Adequate compressions with timely defibrillation are the keys to success.**

**Contact Supervisor Based on Local Policy and Written Protocol to Withhold Resuscitation.



Chest Pain: Cardiac and STEMI

History

- Age
- Medications
- **Erectile Dysfunction Medication**
- Past medical history (MI, Angina, Diabetes, post menopausal)
- Allergies (Aspirin, Morphine, Lidocaine)
- Recent physical exertion
- **Palliation / Provocation**
- **Quality** (crampy, constant, sharp, dull, etc.)
- **Region / Radiation / Referred**
- **Severity** (1-10)
- **Time** (onset / duration / repetition)

Signs and Symptoms

- CP (pain, pressure, aching, vicelike tightness)
- Location (substernal, epigastric, arm, jaw, neck, shoulder)
- Radiation of pain
- Pale, diaphoresis
- Shortness of breath
- Nausea, vomiting, dizziness
- **Time of Onset**

Differential

- **Trauma vs. Medical**
- **Angina vs. Myocardial infarction**
- **Pericarditis**
- **Pulmonary embolism**
- **Asthma / COPD**
- **Pneumothorax**
- **Aortic dissection or aneurysm**
- **GE reflux or Hiatal hernia**
- **Esophageal spasm**
- **Chest wall injury or pain**
- **Pleural pain**
- **Overdose (Cocaine) or Methamphetamine**



Universal Patient Care Protocol



12-Lead ECG

P		Rhythm Assessment	P
A		IV Protocol	A
B		Aspirin (Unless allergy)	B
B		Nitroglycerin SL	B
P		Consider Nitroglycerin Paste	P
P		Continued Pain	P
M		Morphine Fentanyl	M
P		Nausea and Vomiting Consider Ondansetron Prochlorperazine Diphenhydramine	P
Use Protocols as Needed			
		Hypotension Protocol	
		Dysrhythmia Protocols	

**Positive Acute MI
(STEMI = 1 mm ST
Segment Elevation in
2 Contiguous Leads)**

Legend		
F	First Responder	F
B	EMT	B
A	Advanced EMT	A
P	Paramedic	P
M	Medical Control	M
P	Paramedic WITH Online Medical Control	M

Medical Protocols

**Transport based on
EMS System STEMI Plan
with Early Notification
Keep Scene Time to < 15 Minutes**

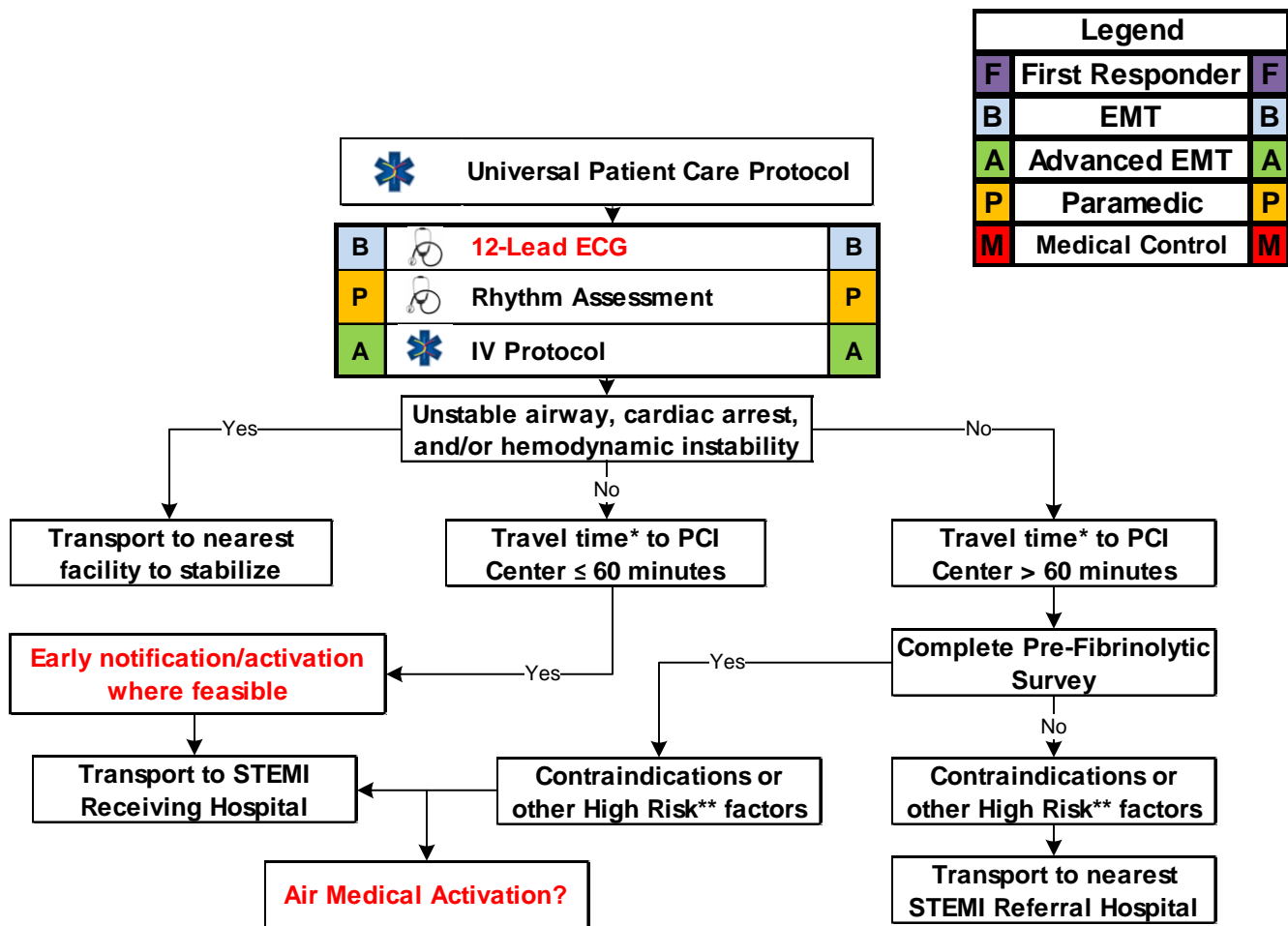
B		If Transporting to a Non-PCI Center Reperfusion Checklist	B
A		Consider NS Bolus for Inferior MIs / Hypotension	A
A		Consider 2 nd IV en route	A
M		Notify Destination or Contact Medical Control	M

Pearls

- **Recommended Exam: Mental Status, Skin, Neck, Lung, Heart, Abdomen, Back, Extremities, Neuro**
- **Items in Red Text are the key performance indicators for the EMS Acute Cardiac (STEMI) Care Toolkit**
- **Avoid Nitroglycerin in any patient who has used erectile dysfunction medication (Viagra or Levitra <24 hours; or Cialis <36 hours) due to potential severe hypotension.**
- **Patients with STEMI (ST-Elevation Myocardial Infarction) or positive Reperfusion Checklist should be transported to the appropriate destination based on the EMS System STEMI Plan**
- If patient has taken nitroglycerin without relief, consider potency of the medication.
- Monitor for hypotension after administration of nitroglycerin and narcotics (Morphine or Fentanyl).
- Nitroglycerin and Narcotics (Morphine or Fentanyl) may be repeated per dosing guidelines in Drug List.
- Diabetics and geriatric patients often have atypical pain, or only generalized complaints.
- Document the time of the 12-Lead ECG in the PCR as a Procedure along with the interpretation (EMT-P)



Chest Pain: STEMI Transport



Pearls

- Recommended Exam: Mental Status, Skin, Neck, Lung, Heart, Abdomen, Back, Extremities, Neuro
- Items in Red Text are the key performance indicators for the EMS Acute Cardiac (STEMI) Care Toolkit
- **High Risk: Cardiogenic shock – inadequate tissue perfusion due to low cardiac output. Systolic Blood Pressure \leq 90 mm Hg in setting of acute myocardial infarction. (Killip class \geq III)
- Patients with STEMI (ST-Elevation Myocardial Infarction) or positive Reperfusion Checklist should be transported to the appropriate destination based on the EMS System STEMI Plan
- Positive Acute MI (STEMI = cardiac symptoms $>$ 15 minutes and $<$ 12 hours **AND** ST segment elevation of \geq 1 mm in 2 or more Anatomically Contiguous Leads **OR** Left Bundle Branch Block NOT KNOWN to be present in past)
- *Travel Time defined with understanding that PCI can be completed within 90 minutes or less including transport time.
- Document the time of the 12-Lead ECG in the PCR as a Procedure along with the interpretation (EMT-P)
- Avoid Nitroglycerin (NTG) in patients who use erectile dysfunction medication (Viagra or Levitra $<$ 24 hours; or Cialis $<$ 36 hours) due to possible severe hypotension.
- If patient has taken NTG without relief, consider potency of medication.
- Monitor for hypotension after administration of NTG and/or Fentanyl.
- Perform a patient interview, examination and treatment as simultaneously and expediently as possible, do not excessively delay treatment or transportation of this patient.
- Additional Information is appended in POLICY: STEMI.



Dental Problems

History

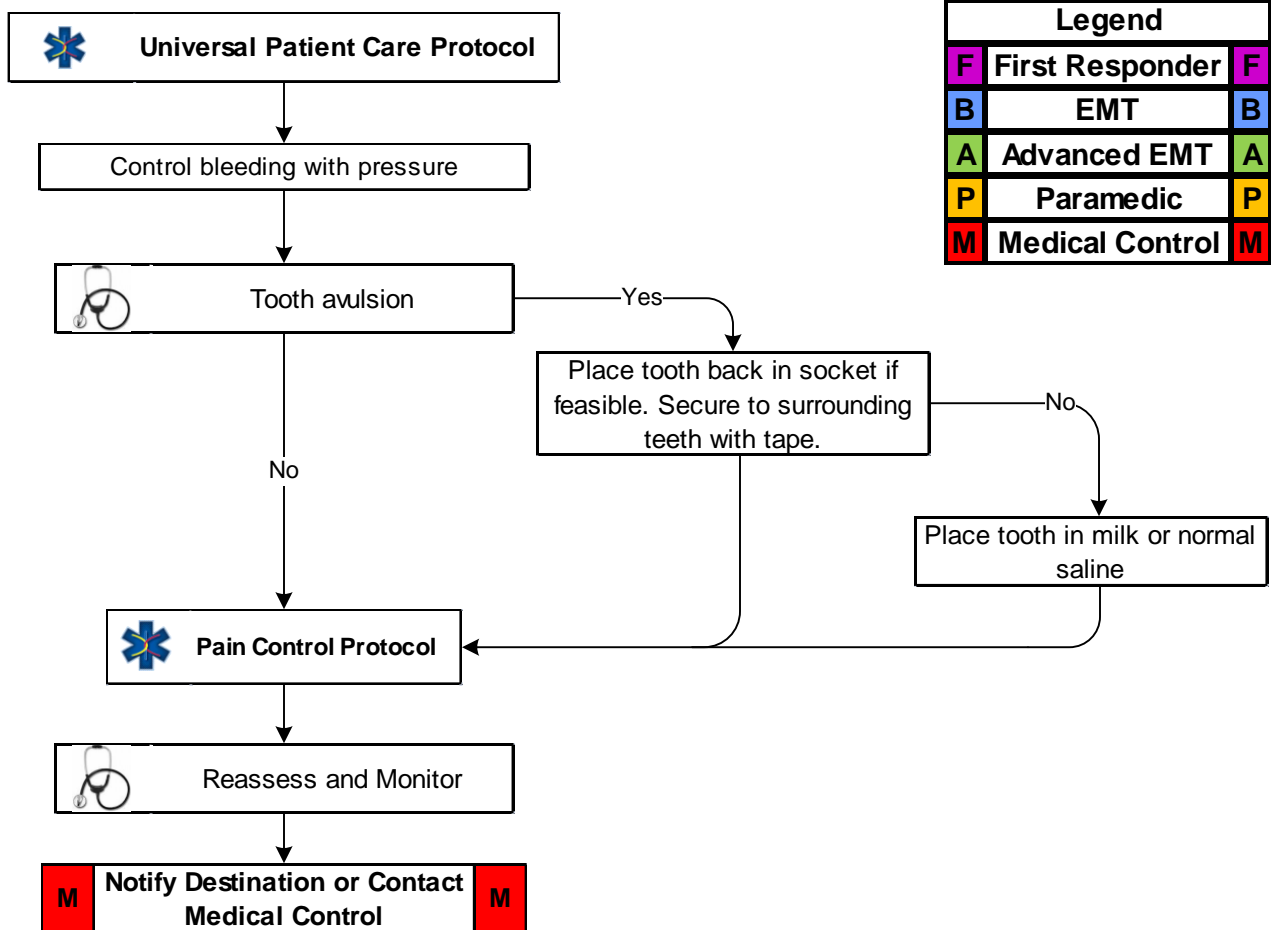
- Age
- Past medical history
- Medications
- Onset of pain / injury
- Trauma with "knocked out" tooth
- Location of tooth
- Whole vs. partial tooth injury

Signs and Symptoms

- Bleeding
- Pain
- Fever
- Swelling
- Tooth missing or fractured

Differential

- Decay
- Infection
- Fracture
- Avulsion
- Abscess
- Facial cellulitis
- Impacted tooth (wisdom)
- TMJ syndrome
- Myocardial infarction



Pearls

- **Recommended Exam: Mental Status, HEENT, Neck, Chest, Lungs, Neuro**
- Significant soft tissue swelling to the face or oral cavity can represent a cellulitis or abscess.
- Scene and transport times should be minimized in complete tooth avulsions. Reimplantation is possible within 4 hours if the tooth is properly cared for.
- All tooth disorders typically need antibiotic coverage in addition to pain control.
- Occasionally cardiac chest pain can radiate to the jaw.
- All pain associated with teeth should be associated with a tooth which is tender to tapping or touch (or sensitivity to cold or hot).
- DO NOT replace tooth if:
 - Obtunded patient
 - Spinal Immobilization
 - AMS
 - Multiple Teeth missing



Epistaxis

History

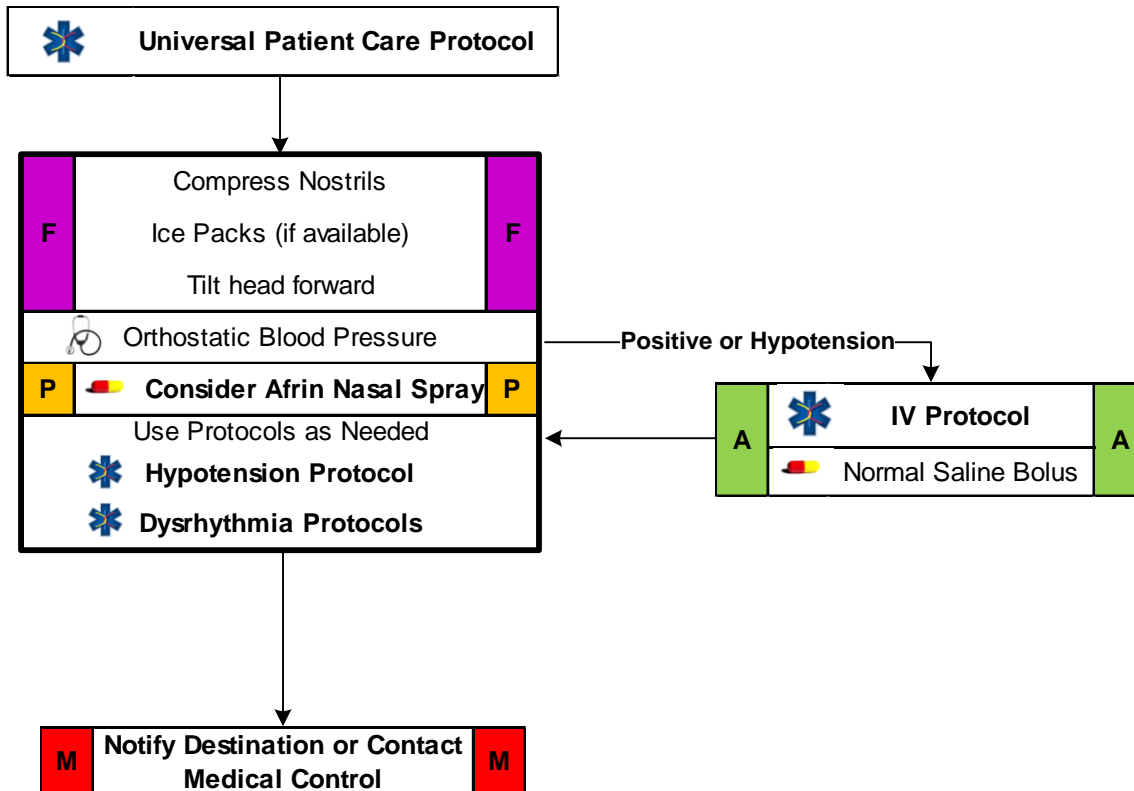
- Age
- Past medical history
- Medications (HTN, anticoagulants, Aspirin, NSAIDS)
- Previous episodes of epistaxis
- Trauma
- Duration of bleeding
- Quantity of bleeding

Signs and Symptoms

- Bleeding from nasal passage
- Pain
- Nausea
- Vomiting

Differential

- Trauma
- Infection (viral URI or Sinusitis)
- Allergic rhinitis
- Lesions (polyps, ulcers)
- Hypertension



Legend		
F	First Responder	F
B	EMT	B
A	Advanced EMT	A
P	Paramedic	P
M	Medical Control	M

Pearls

- **Recommended Exam: Mental Status, HEENT, Heart, Lungs, Neuro**
- It is very difficult to quantify the amount of blood loss with epistaxis.
- Bleeding may also be occurring posteriorly. Evaluate for posterior blood loss by examining the posterior pharynx.
- Anticoagulants include Aspirin, Coumadin, non-steroidal anti-inflammatory medications (Ibuprofen), and many over the counter headache relief powders.



Hypertensive Emergency / Urgency

History

- Documented hypertension
- Related diseases: diabetes, CVA
- renal failure, cardiac
- Medications (compliance ?)
- Erectile dysfunction medication (Levitra/Cialis/Viagra)
- Pregnancy

Signs and Symptoms

One of these

- Systolic BP 220 or greater
- Diastolic BP 120 or greater

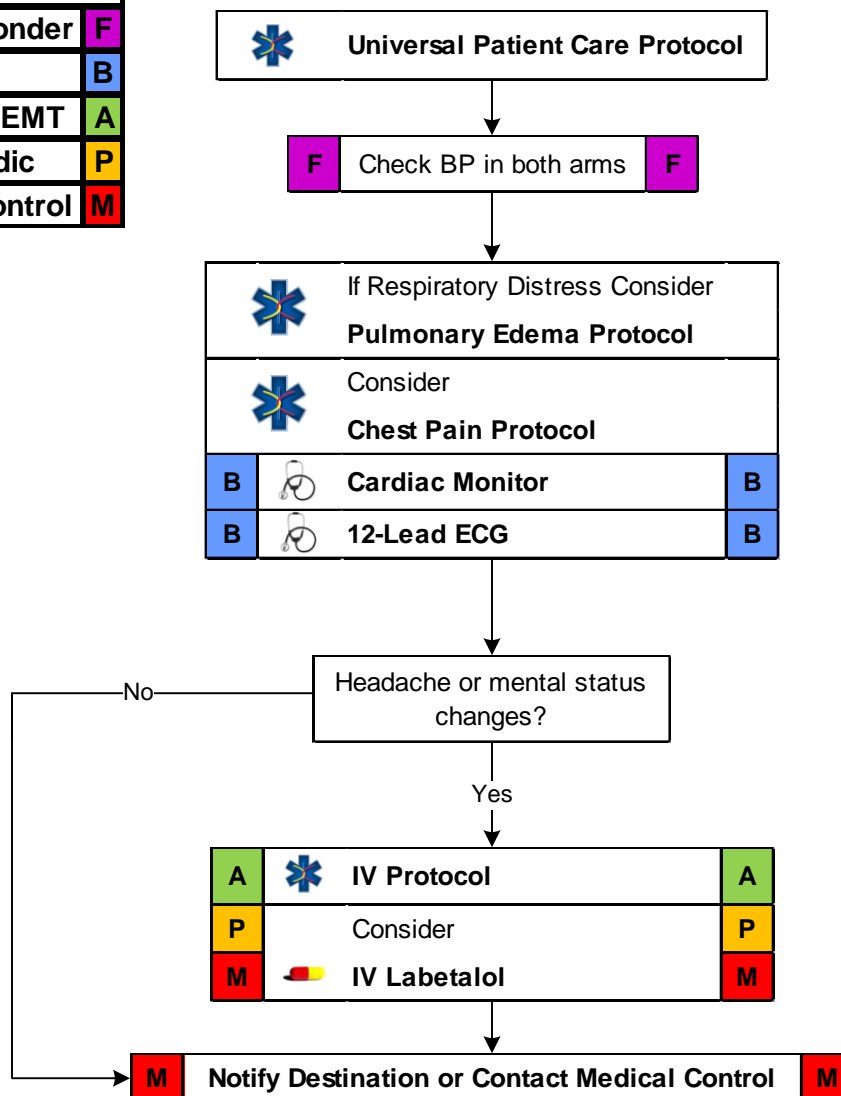
AND at least one of these

- Headache
- Nosebleed
- Blurred vision
- Dizziness

Differential

- Hypertensive encephalopathy
- Primary CNS Injury
(Cushing's response = bradycardia with hypertension)
- Myocardial infarction
- Aortic dissection (aneurysm)
- Pre-eclampsia / Eclampsia

Legend		
F	First Responder	F
B	EMT	B
A	Advanced EMT	A
P	Paramedic	P
M	Medical Control	M



Pearls

- **Recommended Exam: Mental Status, Skin, Neck, Lung, Heart, Abdomen, Back, Extremities, Neuro**
- **Never treat elevated blood pressure based on one set of vital signs or on vital signs alone.**
- Symptomatic hypertension is typically revealed through end organ damage to the cardiac, CNS or renal systems.
- All symptomatic patients with hypertension should be transported with their head elevated.



Hypotension (Symptomatic)

History

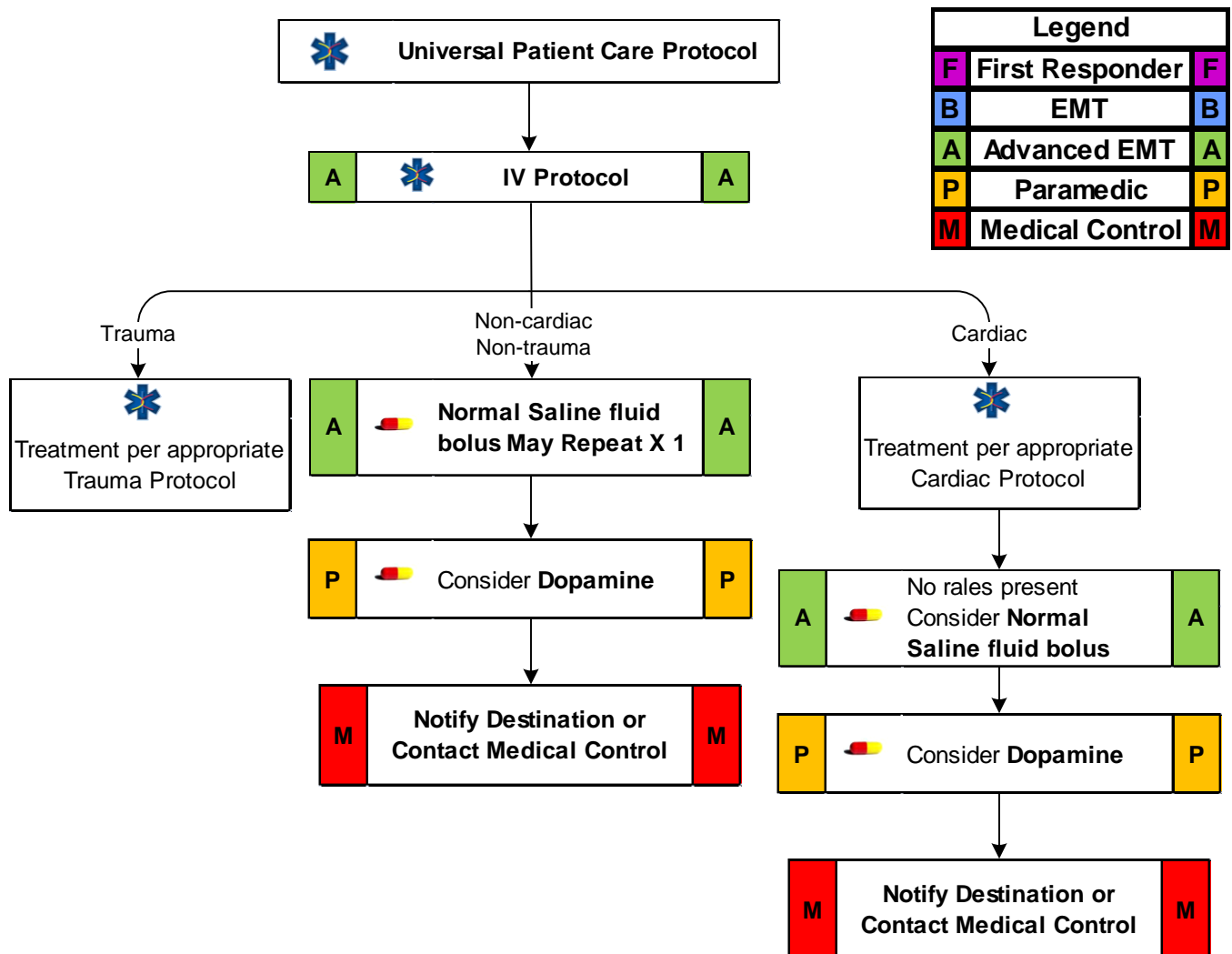
- Blood loss - vaginal or gastrointestinal bleeding, AAA, ectopic
- Fluid loss - vomiting, diarrhea, fever
- Infection
- Cardiac ischemia (MI, CHF)
- Medications
- Allergic reaction
- Pregnancy
- History of poor oral intake

Signs and Symptoms

- Restlessness, confusion
- Weakness, dizziness
- Weak, rapid pulse
- Pale, cool, clammy skin
- Delayed capillary refill
- Coffee-ground emesis
- Tarry stools

Differential

- **Shock**
 - Hypovolemic**
 - Cardiogenic**
 - Septic**
 - Neurogenic**
 - Anaphylactic**
- Ectopic pregnancy
- Dysrhythmias
- Pulmonary embolus
- Tension pneumothorax
- Medication effect / overdose
- Vasovagal
- Physiologic (pregnancy)



Pearls

- **Recommended Exam: Mental Status, Skin, Heart, Lungs, Abdomen, Back, Extremities, Neuro**
- Consider all possible causes of shock and treat per appropriate protocol.
- For non-cardiac, non-trauma hypotension, Dopamine should only be started after 2 liters of NS have been given.



Hypothermia-Induced

History:

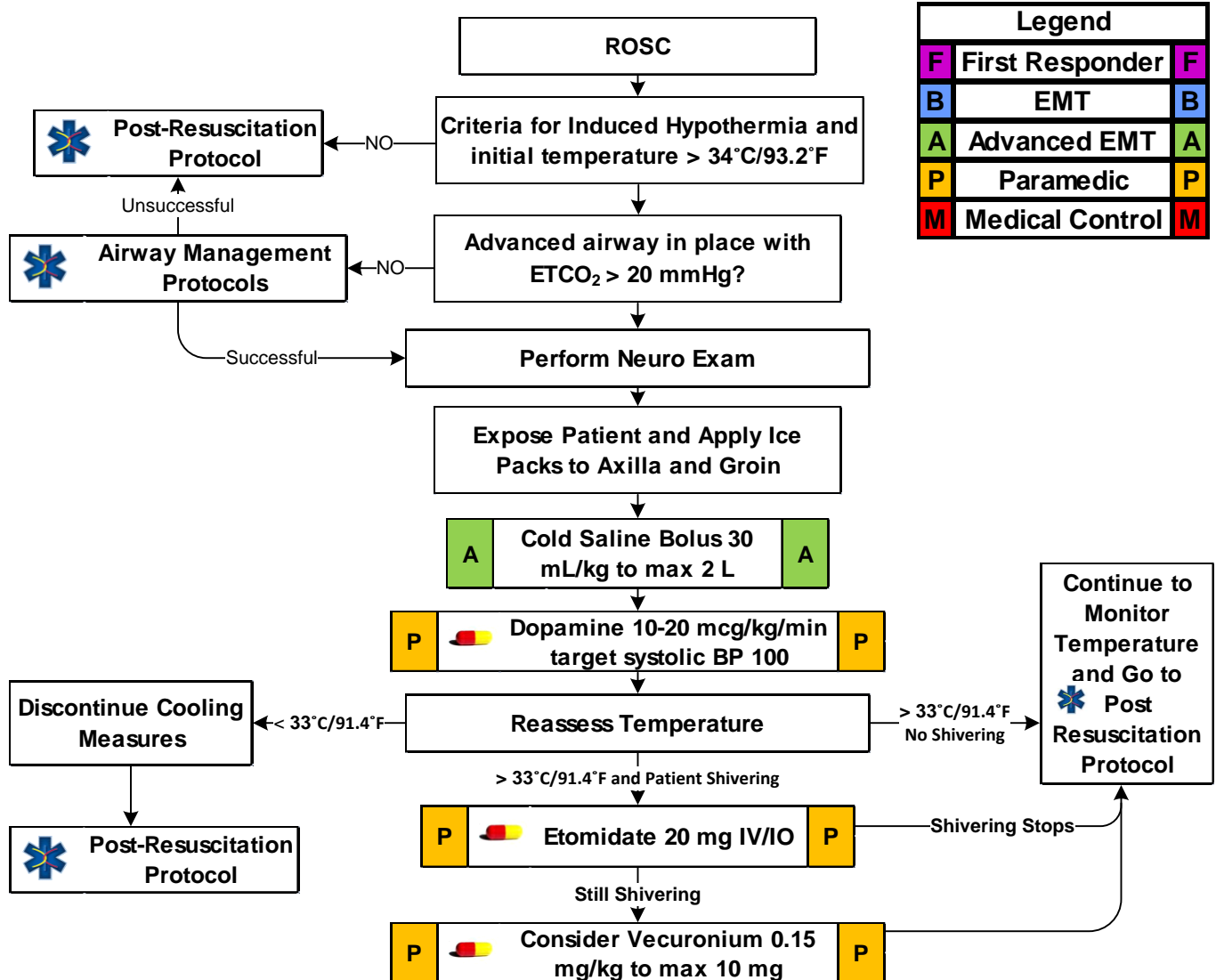
- Non-traumatic cardiac arrest (drowning and hanging are permissible in this protocol)

Signs and Symptoms:

- Return of pulse

Differential:

- Continue to address specific differentials associated with the original dysrhythmia



Pearls

- If BIAID is already in place – DO NOT REMOVE to intubate
- If no advanced airway can be obtained, cooling may only be initiated on order from online medical control
- Take care to protect patient modesty. Undergarments may remain in place during cooling
- Do not delay transport to cool
- Frequently monitor airway, especially after each patient move
- Patients may develop metabolic alkalosis with cooling. Do not hyperventilate.
- Induction of hypothermia **REQUIRES** transport of patient to a facility capable of continuing/maintaining hypothermia protocol.

Inclusion Criteria for Induced Hypothermia

- ✓ ROSC not related to blunt/penetrating trauma or hemorrhage
- ✓ Age 12 or older OR > 55 Kg with adult body habitus
- ✓ Temperature after ROSC greater than 34°C/93.2°F degrees
- ✓ Advanced airway in place with no purposeful response to pain
- ✓ Comatose after ROSC; GCS < 8 AND No purposeful movement

EXCLUSION Criteria for Induced Hypothermia

- ✗ Uncontrolled GI Bleeding
- ✗ Conflict with Do Not Resuscitate (DNR) order.
- ✗ Major intracranial, intra-thoracic, or intra-abdominal surgery within last 14 days.
- ✗ Sepsis as suspected cause of cardiac arrest.
- ✗ Cardiovascular instability as evidenced by: uncontrollable arrhythmias, refractory hypotension.



Overdose / Toxic Ingestion

History

- Ingestion or suspected ingestion of a potentially toxic substance
- Substance ingested, route, quantity
- Time of ingestion
- Reason (suicidal, accidental, criminal)
- Available medications in home
- Past medical history, medications

Signs and Symptoms

- Mental status changes
- Hypotension / hypertension
- Decreased respiratory rate
- Tachycardia, dysrhythmias
- Seizures

Differential

- Tricyclic antidepressants (TCAs)
- Acetaminophen (Tylenol)
- Aspirin
- Depressants
- Stimulants
- Anticholinergic
- Cardiac medications
- Solvents, Alcohols, Cleaning agents
- Insecticides (organophosphates)

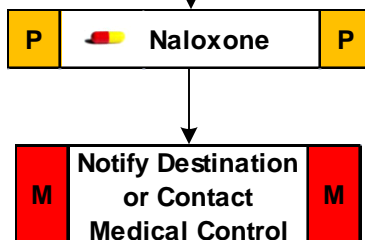


Universal Patient Care Protocol

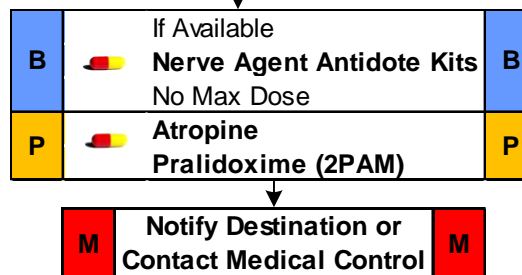
B		Cardiac Monitor	B
B		12-Lead ECG	B
A		IV Protocol	A
B		Consider Charcoal if patient alert	B
P		Tricyclic Ingestion? Sodium Bicarbonate if Tachycardia or QRS widening	P
		Consider Chest Pain Protocol	

Legend		
F	First Responder	F
B	EMT	B
A	Advanced EMT	A
P	Paramedic	P
M	Medical Control	M

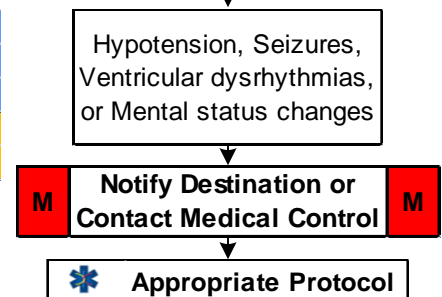
Respiratory Depression



Organophosphates Carbamates



Other



Pearls

- **Recommended Exam: Mental Status, Skin, HEENT, Heart, Lungs, Abdomen, Extremities, Neuro**
- Do not rely on patient history of ingestion, especially in suicide attempts. Make sure patient is still not carrying other medications or has any weapons.
- Bring bottles, contents, emesis to ED.
- **Tricyclic:** 4 major areas of toxicity: seizures, dysrhythmias, hypotension, decreased mental status or coma; rapid progression from alert mental status to death.
- **Acetaminophen:** initially normal or nausea/vomiting. If not detected and treated, causes irreversible liver failure
- **Aspirin:** Early signs consist of abdominal pain and vomiting. Tachypnea and altered mental status may occur later. Renal dysfunction, liver failure, and/or cerebral edema among other things can take place later.
- **Depressants:** decreased HR, decreased BP, decreased temperature, decreased respirations, non-specific pupils
- **Stimulants:** increased HR, increased BP, increased temperature, dilated pupils, seizures
- **Anticholinergic:** increased HR, increased temperature, dilated pupils, mental status changes
- **Cardiac Medications:** dysrhythmias and mental status changes
- **Solvents:** nausea, coughing, vomiting, and mental status changes
- **Insecticides:** increased or decreased HR, increased secretions, nausea, vomiting, diarrhea, pinpoint pupils
- Consider restraints if necessary for patient's and/or personnel's protection per the Restraint Procedure.
- **Nerve Agent Antidote kits** contain 2 mg of Atropine and 600 mg of pralidoxime in an autoinjector for self administration or patient care. These kits may be available as part of the domestic preparedness for Weapons of Mass Destruction.



Post Resuscitation

History

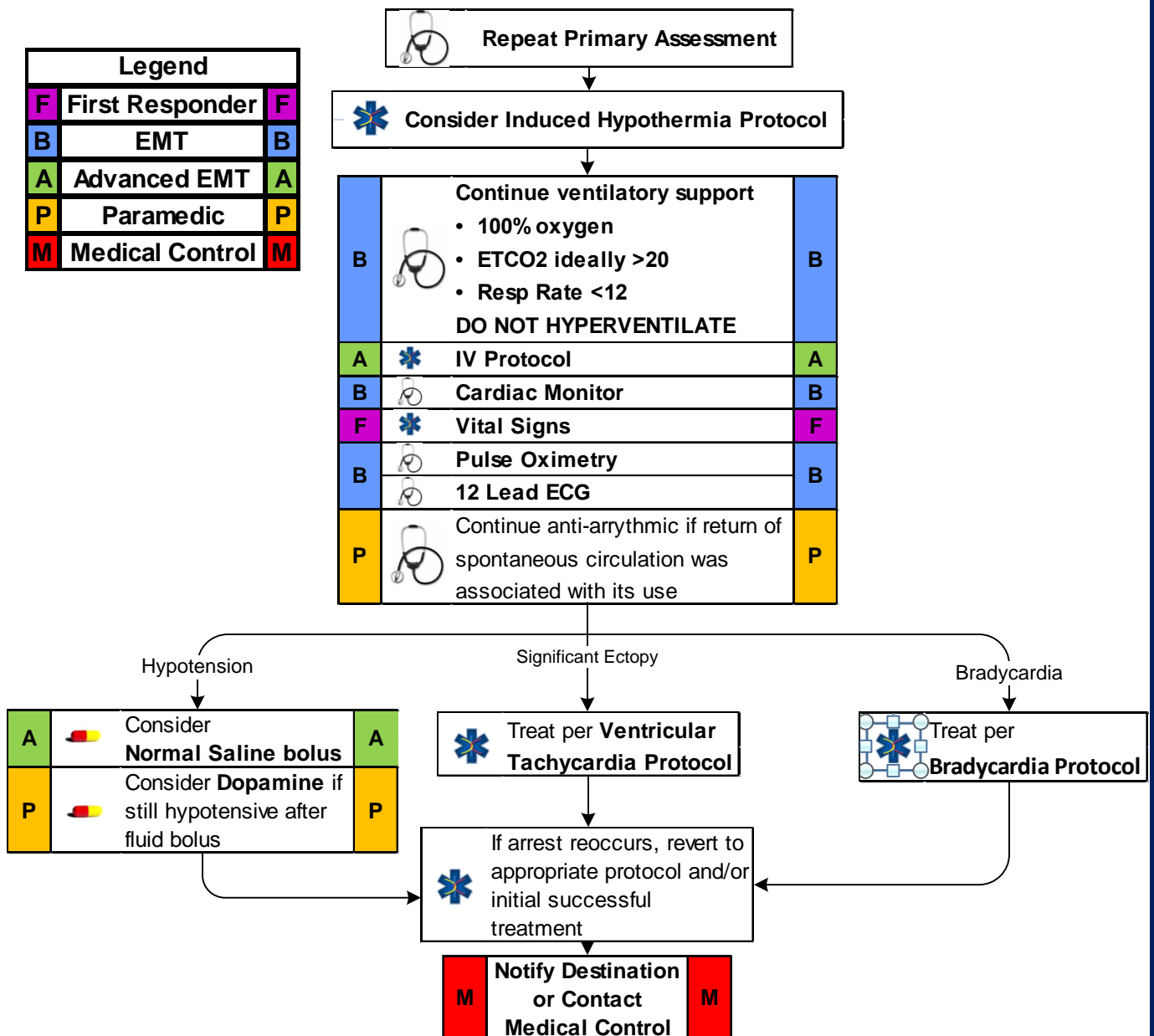
- Respiratory arrest
- Cardiac arrest

Signs/Symptoms

- Return of pulse

Differential

- Continue to address specific differentials associated with the original dysrhythmia



Pearls

- **Recommended Exam: Mental Status, Neck, Skin, Lungs, Heart, Abdomen, Extremities, Neuro**
- Hyperventilation is a significant cause of hypotension and recurrence of cardiac arrest in the post resuscitation phase and must be avoided at all costs.
- Most patients immediately post resuscitation will require ventilatory assistance.
- The condition of post-resuscitation patients fluctuates rapidly and continuously, and they require close monitoring. Appropriate post-resuscitation management may best be planned in consultation with medical control.
- Common causes of post-resuscitation hypotension include hyperventilation, hypovolemia, pneumothorax, and medication reaction to ALS drugs.
- Titrate Dopamine to maintain a systolic blood pressure >100. Ensure adequate fluid resuscitation is ongoing.
- Induction of hypothermia **REQUIRES** transport of patient to a facility capable of continuing/maintaining hypothermia protocol.



Pulmonary Edema

History

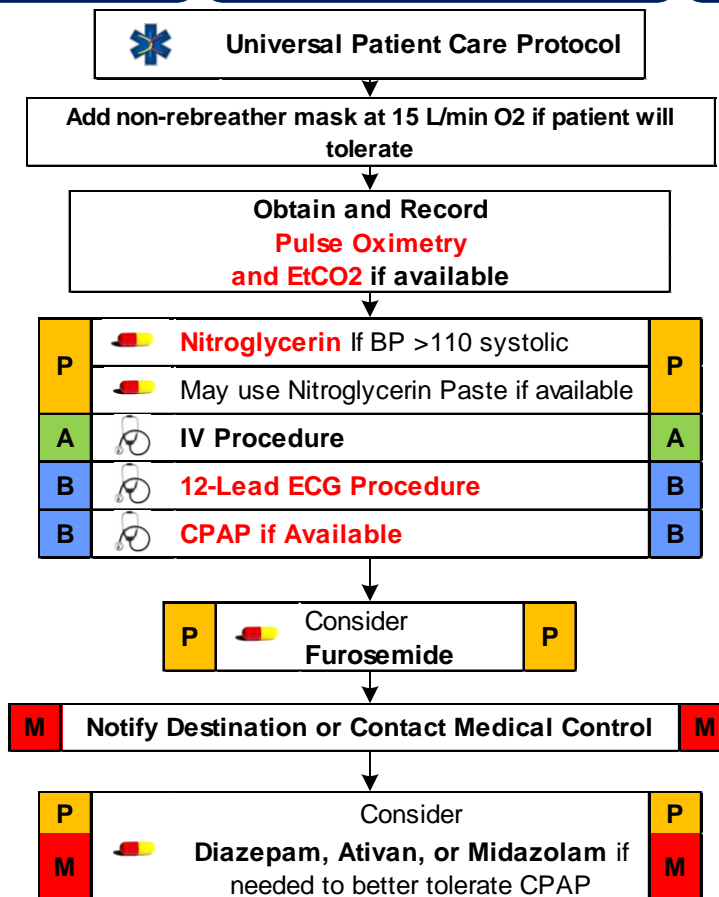
- Congestive heart failure
- Past medical history
- Medications (Digoxin, Lasix)
- **Erectile Dysfunction Medication**
- Cardiac history –past myocardial infarction

Signs/Symptoms

- Respiratory distress, bilateral rales
- Apprehension, orthopnea
- Jugular vein distention
- Pink, frothy sputum
- Peripheral edema, diaphoresis
- Hypotension, shock
- Chest pain

Differential

- **Myocardial infarction**
- **Congestive heart failure**
- **Asthma**
- **Anaphylaxis**
- **Aspiration**
- **COPD**
- **Pleural effusion**
- **Pneumonia**
- **Pulmonary embolus**
- **Pericardial tamponade**
- **Toxic Exposure**



Legend		
F	First Responder	F
B	EMT	B
A	Advanced EMT	A
P	Paramedic	P
M	Medical Control	M
P	Paramedic WITH	P
M	Online Medical Control	M

Pearls

- **Recommended Exam: Mental Status, Skin, Neck, Lung, Heart, Abdomen, Back, Extremities, Neuro**
- **Items in Red Text are key performance measures used to evaluate protocol compliance and care**
- Avoid Nitroglycerin in any patient who has used erectile dysfunction medication (Viagra or Levitra <24 hours; or Cialis <36 hours) due to potential severe hypotension.
- Furosemide and Narcotics have NOT been shown to improve the outcomes of EMS patients with pulmonary edema. This historically has been a mainstay of EMS treatment.
- If patient has taken nitroglycerin without relief, consider potency of the medication.
- Consider myocardial infarction in all these patients. Diabetics and geriatric patients often have atypical pain, or only generalized complaints.
- **Carefully monitor the level of consciousness, BP, and respiratory status with the above interventions.**
- If Nitropaste is used, do not continue to use Nitroglycerin SL
- Allow the patient to be in their position of comfort to maximize their breathing effort.
- Document CPAP application using the CPAP procedure in the PCR. Document 12 Lead ECG using the 12 Lead ECG procedure.



Pulseless Electrical Activity (PEA)

History

- Past medical history
- Medications
- Events leading to arrest
- End stage renal disease
- Estimated downtime
- Suspected hypothermia
- Suspected overdose
 - Tricyclics
 - Digitalis
 - Beta blockers
 - Calcium channel blockers
- DNR form

Signs and Symptoms

- Pulseless
- Apneic
- Electrical activity on ECG
- No heart tones on auscultation

Differential

- Hypovolemia (Trauma, AAA, other)
- Cardiac tamponade
- Hypothermia
- Drug overdose (Tricyclics, Digitalis, Beta blockers, Calcium channel blockers)
- Massive myocardial infarction
- Hypoxia
- Tension pneumothorax
- Pulmonary embolus
- Acidosis
- Hyperkalemia



Cardiac Arrest Protocol

B		Cardiac Monitor	B
F		CPR	F
		Airway Protocol	
A		IV Protocol	A

P		Epinephrine or Vasopressin	P
		Atropine if rate <60	

A		Normal Saline Bolus	A
		Dextrose 50%	
P		Naloxone	P
		Glucagon (suspected Beta Blocker Overdose)	
P		Atropine if rate <60	P
		Bicarbonate (tricyclic overdose, hyperkalemia, renal failure)	
		Dopamine	
		Chest decompression	

P		Consider Epinephrine Drip	P
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Criteria for Discontinuation

M	Notify Destination or Contact Medical Control	M
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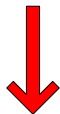
Legend

F	First Responder	F
B	EMT	B
A	Advanced EMT	A
P	Paramedic	P
M	Medical Control	M

Medical Protocols

AT ANY TIME

Return of Spontaneous Circulation



Go to Post Resuscitation Protocol

Yes

Stop resuscitation

No

Pearls

- **Recommended Exam: Mental Status**
- Consider each possible cause listed in the differential: Survival is based on identifying and correcting the cause!
- Discussion with Medical Control can be a valuable tool in developing a differential diagnosis and identifying possible treatment options.



Respiratory Distress

History

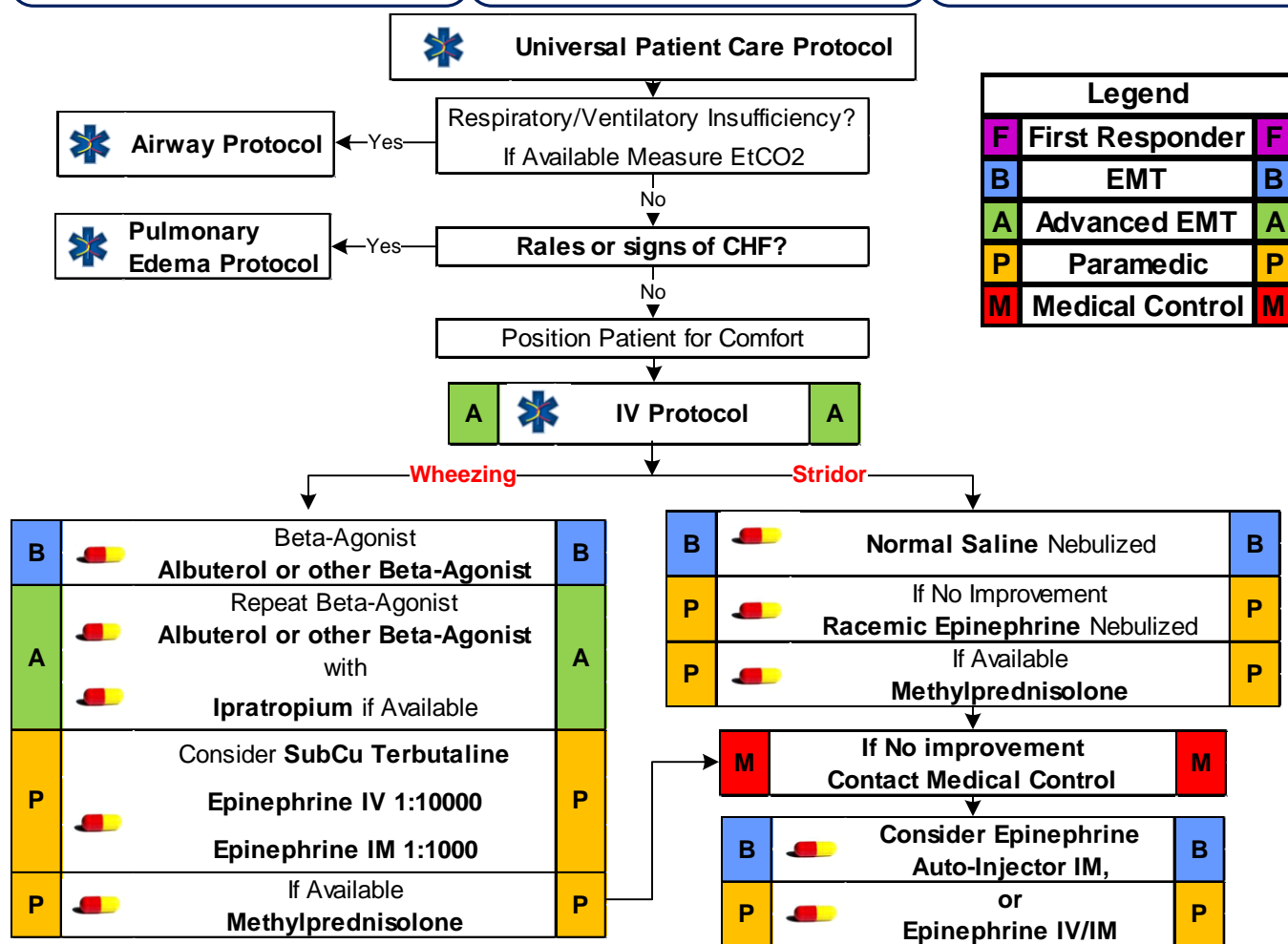
- Asthma; COPD – chronic bronchitis, emphysema, congestive heart failure
- Home treatment (oxygen, nebulizer)
- Medications (theophylline, steroids, inhalers)
- Toxic exposure, smoke inhalation

Signs and Symptoms

- Shortness of breath
- Pursed lip breathing
- Decreased ability to speak
- Increased respiratory rate and effort
- Wheezing, rhonchi
- Use of accessory muscles
- Fever, cough
- Tachycardia

Differential

- Asthma
- Anaphylaxis
- Aspiration
- COPD (Emphysema, Bronchitis)
- Pleural effusion
- Pneumonia
- Pulmonary embolus
- Pneumothorax
- Cardiac (MI or CHF)
- Pericardial tamponade
- Hyperventilation
- Inhaled toxin (Carbon monoxide, etc.)



Legend		
F	First Responder	F
B	EMT	B
A	Advanced EMT	A
P	Paramedic	P
M	Medical Control	M

Pearls

- **Recommended Exam: Mental Status, HEENT, Skin, Neck, Heart, Lungs, Abdomen, Extremities, Neuro**
- **Items in Red Text are key performance measures used to evaluate protocol compliance and care**
- EMT administration of Beta-Agonists (e.g., Albuterol) is restricted to patients who are under doctor's orders with a prescription for the drug.
- **Pulse oximetry** should be monitored continuously if initial saturation is < or = 96%, or there is a decline in patients status despite normal pulse oximetry readings.
- **Contact Medical Control** prior to administering epinephrine in patients who are >50 years of age, have a history of cardiac disease, or if the patient's heart rate is >150. Epinephrine may precipitate cardiac ischemia. A 12-lead ECG should be performed on these patients.
- A silent chest in respiratory distress is a pre-respiratory arrest sign.
- ETCO₂ should be used when Respiratory Distress is significant and does not respond to initial Beta-Agonist dose.



Seizure

History

- Reported / witnessed seizure activity
- Previous seizure history
- Medical alert tag information
- Seizure medications
- History of trauma
- History of diabetes
- History of pregnancy

Signs and Symptoms

- Decreased mental status
- Sleepiness
- Incontinence
- Observed seizure activity
- Evidence of trauma
- Unconscious

Differential

- CNS (Head) trauma
- Tumor
- Metabolic, Hepatic, or Renal failure
- Hypoxia
- Electrolyte abnormality (Na, Ca, Mg)
- Drugs, Medications,
- Non-compliance
- Infection / Fever
- Alcohol withdrawal
- Eclampsia
- Stroke
- Hyperthermia
- Hypoglycemia



Universal Patient Care Protocol

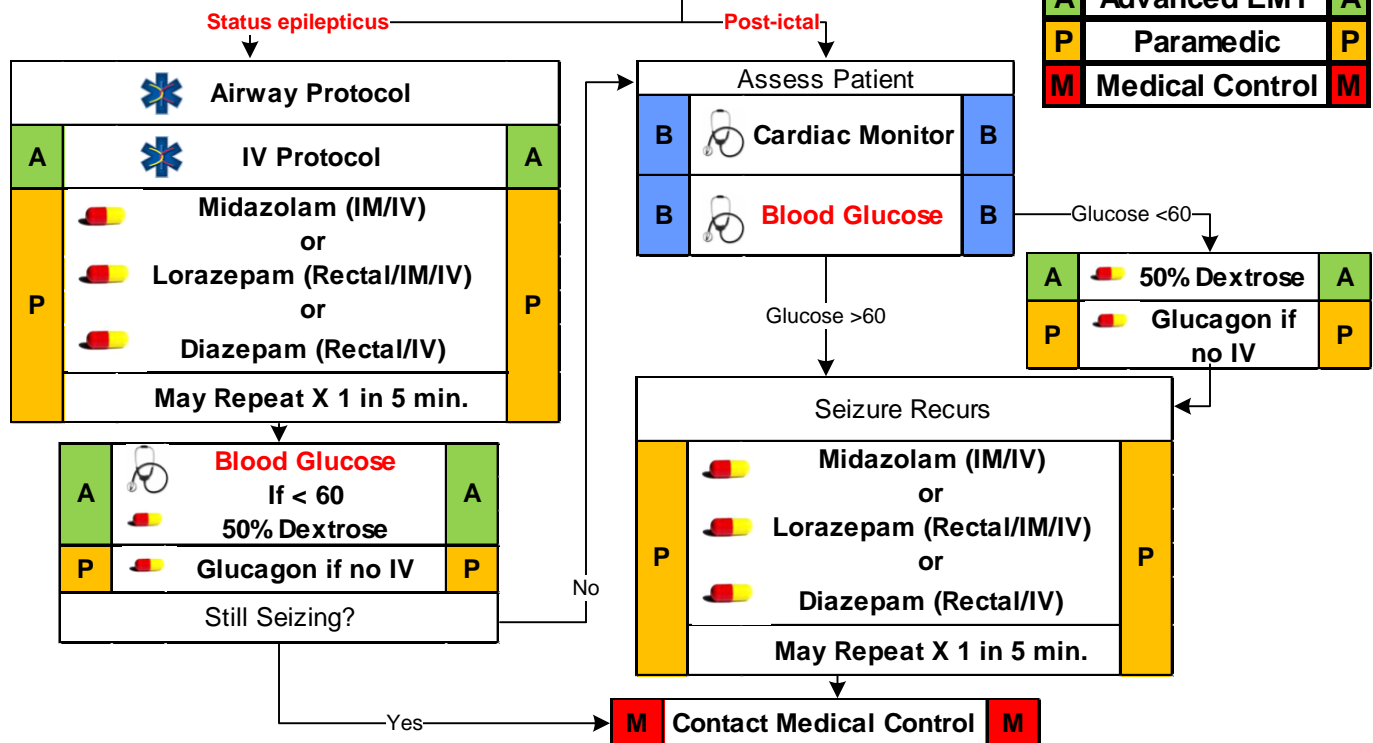


Spinal Immobilization Protocol

Legend

F	First Responder	F
B	EMT	B
A	Advanced EMT	A
P	Paramedic	P
M	Medical Control	M

Medical Protocols



Pearls

- **Recommended Exam: Mental Status, HEENT, Heart, Lungs, Extremities, Neuro**
- **Items in Red Text are key performance measures used to evaluate protocol compliance and care**
- Status epilepticus is defined as two or more successive seizures without a period of consciousness or recovery.
- This is a true emergency requiring rapid airway control, treatment, and transport.
- **Grand mal seizures (generalized)** are associated with loss of consciousness, incontinence, and tongue trauma.
- **Focal seizures (petit mal)** effect only a part of the body and are not usually associated with a loss of consciousness
- **Jacksonian seizures** are seizures which start as a focal seizure and become generalized.
- Be prepared for airway problems and continued seizures.
- Assess possibility of occult trauma and substance abuse.
- Be prepared to assist ventilations especially if diazepam or midazolam is used.
- For any seizure in a pregnant patient, follow the OB Emergencies Protocol.
- Diazepam (Valium) is not effective when administered IM. It should be given IV or Rectally. Midazolam is well absorbed when administered IM.



Supraventricular Tachycardia

History

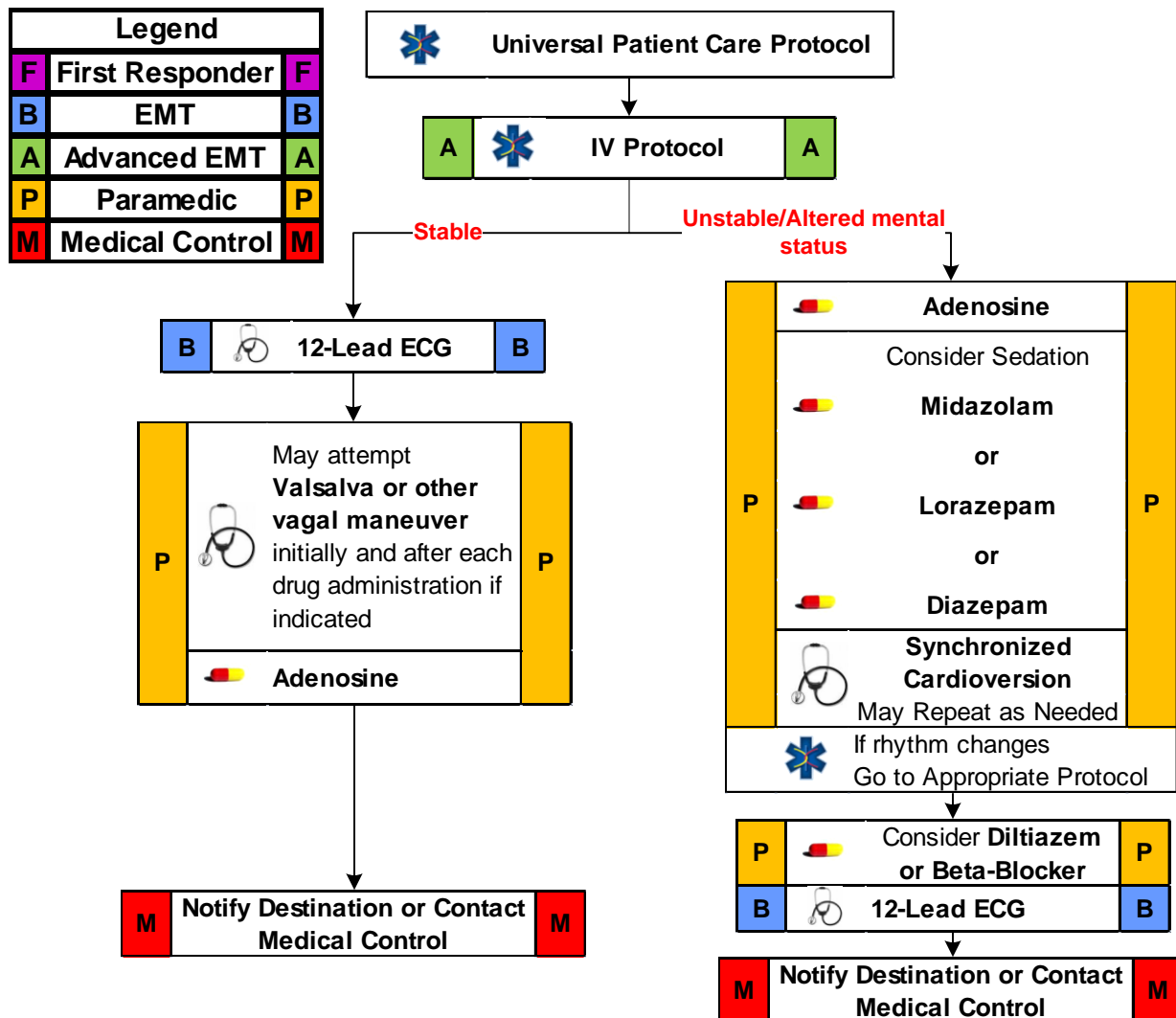
- Medications (Aminophylline, Diet pills, Thyroid supplements, Decongestants, Digoxin, Ritalin, Adderall)
- Diet (caffeine, chocolate)
- Drugs (nicotine, cocaine)
- Past medical history
- History of palpitations / heart racing
- Syncope / near syncope

Signs and Symptoms

- HR > 150/Min
- **QRS < .12 Sec (if QRS > .12 sec, go to V-Tach Protocol)**
- **If history of WPW, go to V-tach Protocol**
- Dizziness, CP, SOB
- Potential presenting rhythm
 - Atrial/Sinus tachycardia
 - Atrial fibrillation / flutter
 - Multifocal atrial tachycardia

Differential

- Heart disease (WPW, Valvular)
- Sick sinus syndrome
- Myocardial infarction
- Electrolyte imbalance
- Exertion, Pain, Emotional stress
- Fever
- Hypoxia
- Hypovolemia or Anemia
- Drug effect / Overdose (see HX)
- Hyperthyroidism
- Pulmonary embolus



Pearls

- **Recommended Exam: Mental Status, Skin, Neck, Lung, Heart, Abdomen, Back, Extremities, Neuro**
- If patient has history or 12 Lead ECG reveals Wolfe Parkinson White (WPW), DO NOT administer a Calcium Channel Blocker (e.g., Diltiazem) or Beta Blockers.
- Adenosine may not be effective in identifiable atrial flutter/fibrillation, yet is not harmful.
- Monitor for hypotension after administration of Calcium Channel Blocker or Beta Blockers.
- Monitor for respiratory depression and hypotension associated with Midazolam.
- Continuous pulse oximetry is required for all SVT Patients.
- Document all rhythm changes with monitor strips and obtain monitor strips with each therapeutic intervention.



Suspected Stroke

History

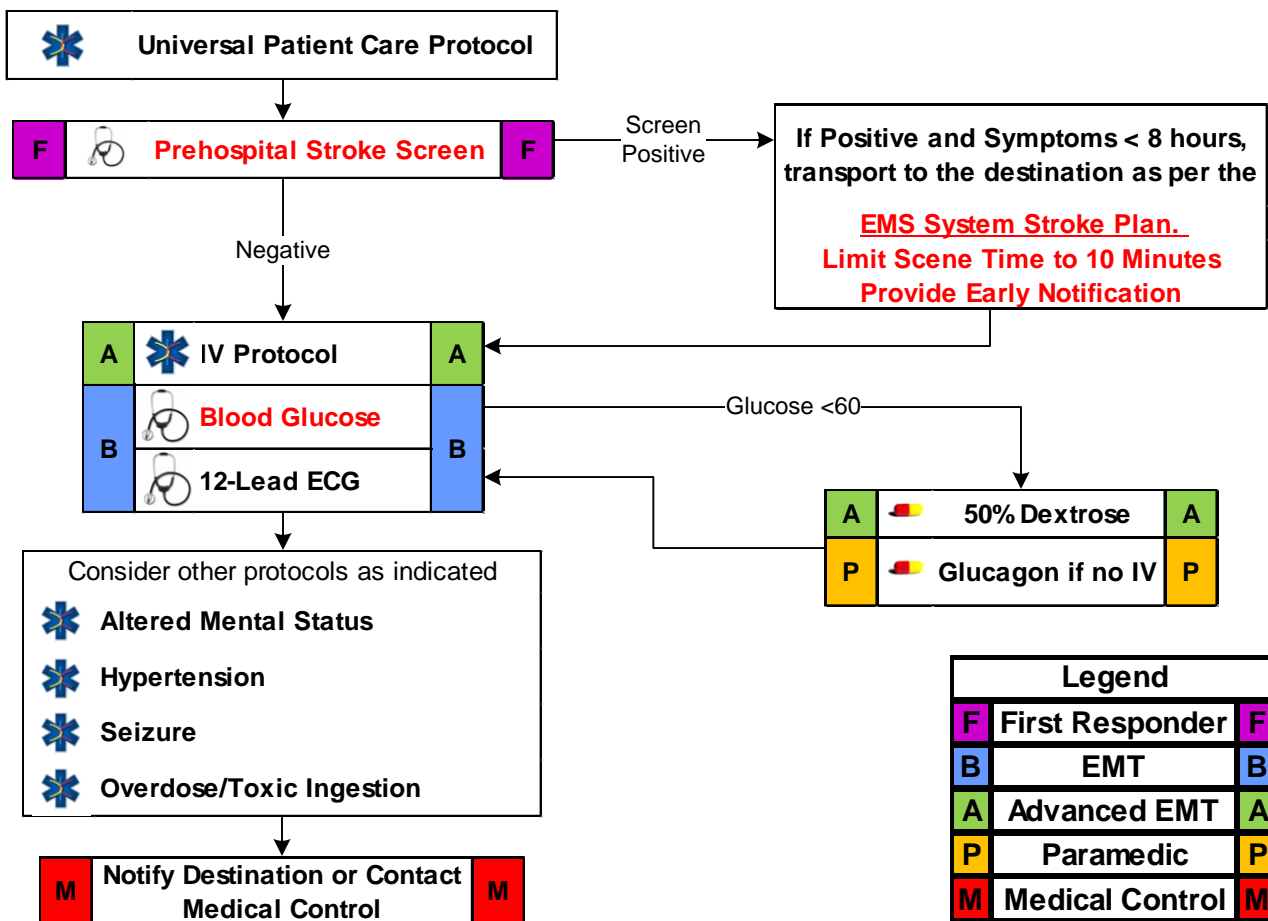
- Previous CVA, TIA's
- Previous cardiac / vascular surgery
- Associated diseases: diabetes, hypertension, CAD
- Atrial fibrillation
- Medications (blood thinners)
- History of trauma

Signs and Symptoms

- Altered mental status
- Weakness / Paralysis
- Blindness or other sensory loss
- Aphasia / Dysarthria
- Syncope
- Vertigo / Dizziness
- Vomiting
- Headache
- Seizures
- Respiratory pattern change
- Hypertension / hypotension

Differential

- **See Altered Mental Status**
- **TIA (Transient ischemic attack)**
- **Seizure**
- **Hypoglycemia**
- **Tumor**
- **Trauma**

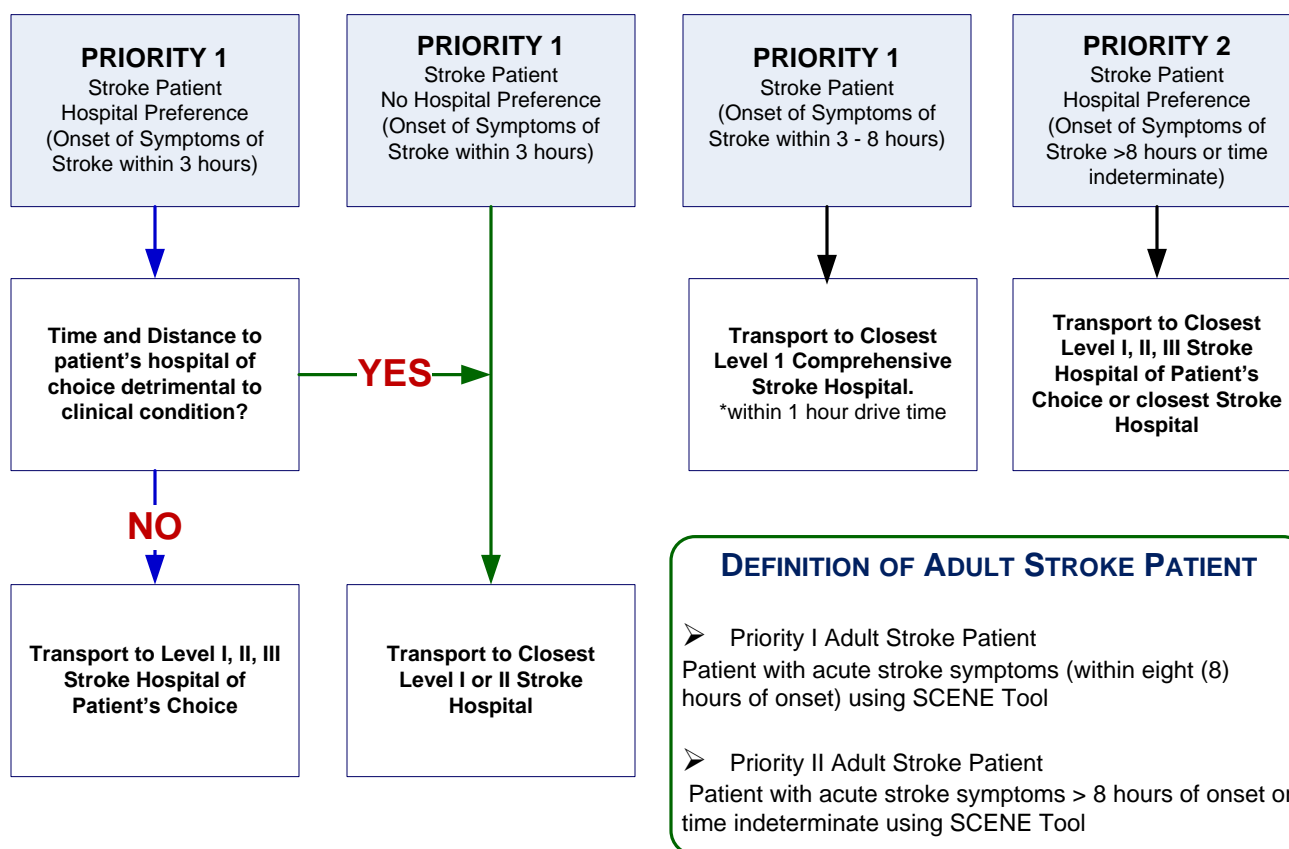


Pearls

- **Recommended Exam: Mental Status, HEENT, Heart, Lungs, Abdomen, Extremities, Neuro**
- **Items in Red Text are key performance measures used in the EMS Acute Stroke Care Toolkit**
- **The Reperfusion Checklist should be completed for any suspected stroke patient. With a duration of symptoms of less than 8 hours, scene times should be limited to 10 minutes, early destination notification/activation should be provided and transport times should be minimized based on the EMS System Stroke Plan.**
- **Onset of symptoms** is defined as the last witnessed time the patient was symptom free (i.e. awakening with stroke symptoms would be defined as an onset time of the previous night when patient was symptom free)
- The differential listed on the Altered Mental Status Protocol should also be considered.
- Elevated blood pressure is commonly present with stroke. Consider treatment if diastolic is > 120 mmHg.
- Be alert for airway problems (swallowing difficulty, vomiting/aspiration).
- Hypoglycemia can present as a localized neurologic deficit, especially in the elderly.
- Document the Stroke Screen results in the PCR.
- Document the 12 Lead ECG as a procedure in the PCR.



Adult Stroke Patient Destination Determination by Stroke Center Capability



Level I Stroke Hospital COMPREHENSIVE STROKE CENTER

- Physician / Nursing Staff trained in neurologic care on-site 24 hours a day
- Organized Emergency Department with written pathway for rapid identification and management of acute stroke patient
- CT of the head with technician on-site 24 hours a day
- Clinical Laboratory Services
- 24 / 7 Stroke Call and capabilities for IV tPA therapy for eligible patients
- 24 / 7 Endovascular Call and capabilities for endovascular therapy for eligible patients
- 24 / 7 Neurosurgery Call
- Neuro-Intensive Care Unit and neurointensivists
- Stroke Registry and Quality Improvement Process

Level II Stroke Hospital PRIMARY STROKE CENTER

- Physician / Nursing Staff trained in neurologic care on-site 24 hours a day
- Organized Emergency Department with written pathway for rapid identification and management of acute stroke patient
- CT of the head with technician on-site 24 hours a day
- Clinical Laboratory Services
- 24 / 7 Stroke Call and capabilities for IV tPA therapy for eligible patients
- Stroke Registry and Quality Improvement Process

Level IV Non-Stroke Hospitals

No organized treatment for acute stroke

Level III Stroke Hospital STROKE ENABLED CENTER

- Emergency Department 24 hours a day with Physician or physician extender and nursing staff trained in neurological care on-site 24 hours a day.
- CT of the head with technician on-site 24 hours a day
- Clinical Laboratory Services
- Telestroke Video – Conferencing Capabilities
- 24 / 7 Stroke Call with Capabilities for IV tPA therapy for eligible patients
- Transfer agreement established in advance to ensure orderly transition from Level II Stroke Hospital to specialized stroke care facility



Syncope

History

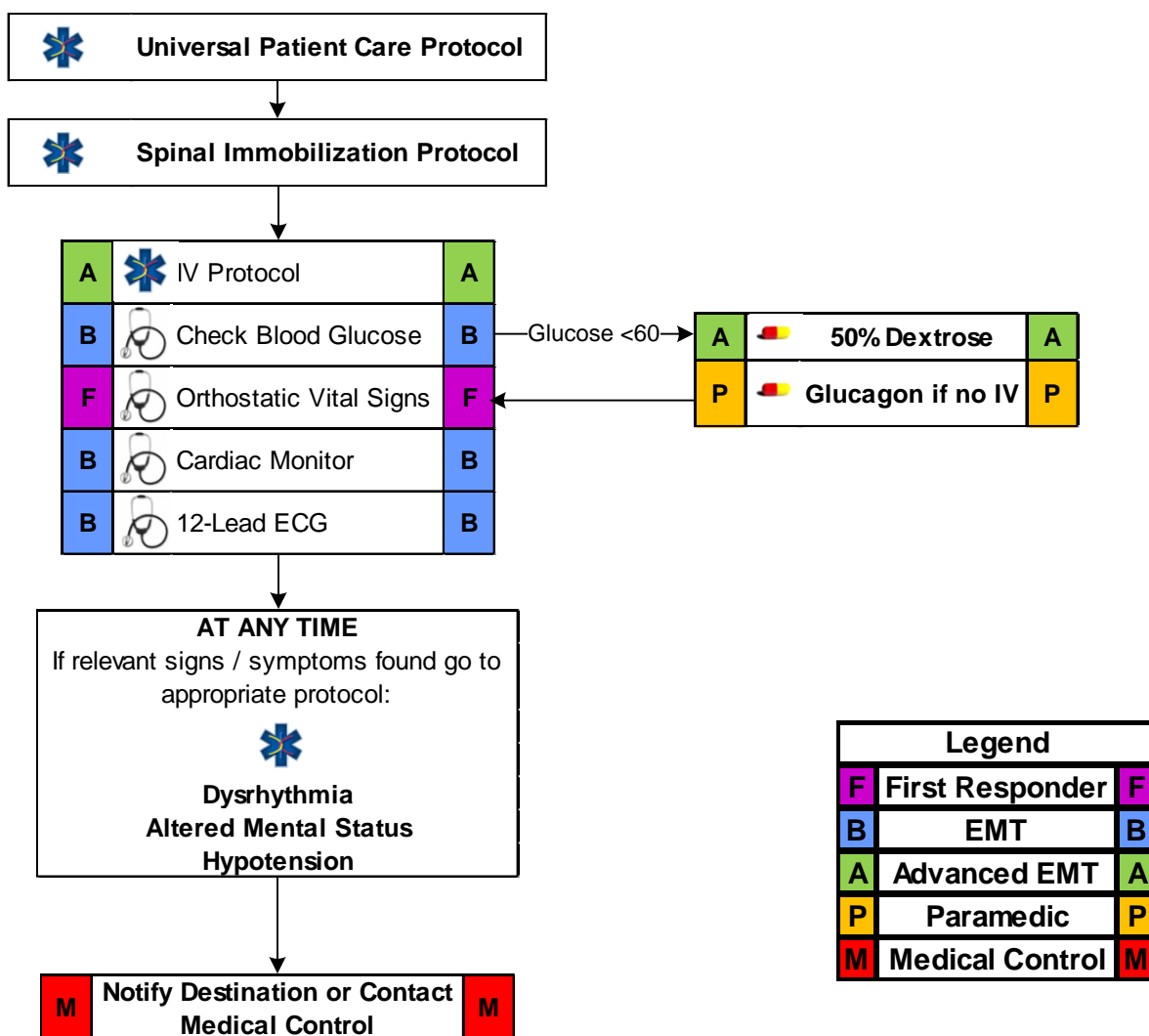
- Cardiac history, stroke, seizure
- Occult blood loss (GI, ectopic)
- Females: LMP, vaginal bleeding
- Fluid loss: nausea, vomiting, diarrhea
- Past medical history
- Medications

Signs and Symptoms

- Loss of consciousness with recovery
- Lightheadedness, dizziness
- Palpitations, slow or rapid pulse
- Pulse irregularity
- Decreased blood pressure

Differential

- Vasovagal
- Orthostatic hypotension
- Cardiac syncope
- Micturition / Defecation syncope
- Psychiatric
- Stroke
- Hypoglycemia
- Seizure
- Shock (see Shock Protocol)
- Toxicologic (Alcohol)
- Medication effect (hypotension)



Pearls

- **Recommended Exam: Mental Status, Skin, HEENT, Heart, Lungs, Abdomen, Back, Extremities, Neuro**
- Assess for signs and symptoms of trauma if associated or questionable fall with syncope.
- Consider dysrhythmias, GI bleed, ectopic pregnancy, and seizure as possible causes of syncope.
- These patients should be transported.
- More than 25% of geriatric syncope is cardiac dysrhythmia based.



Ventricular Fibrillation

Pulseless Ventricular Tachycardia

History

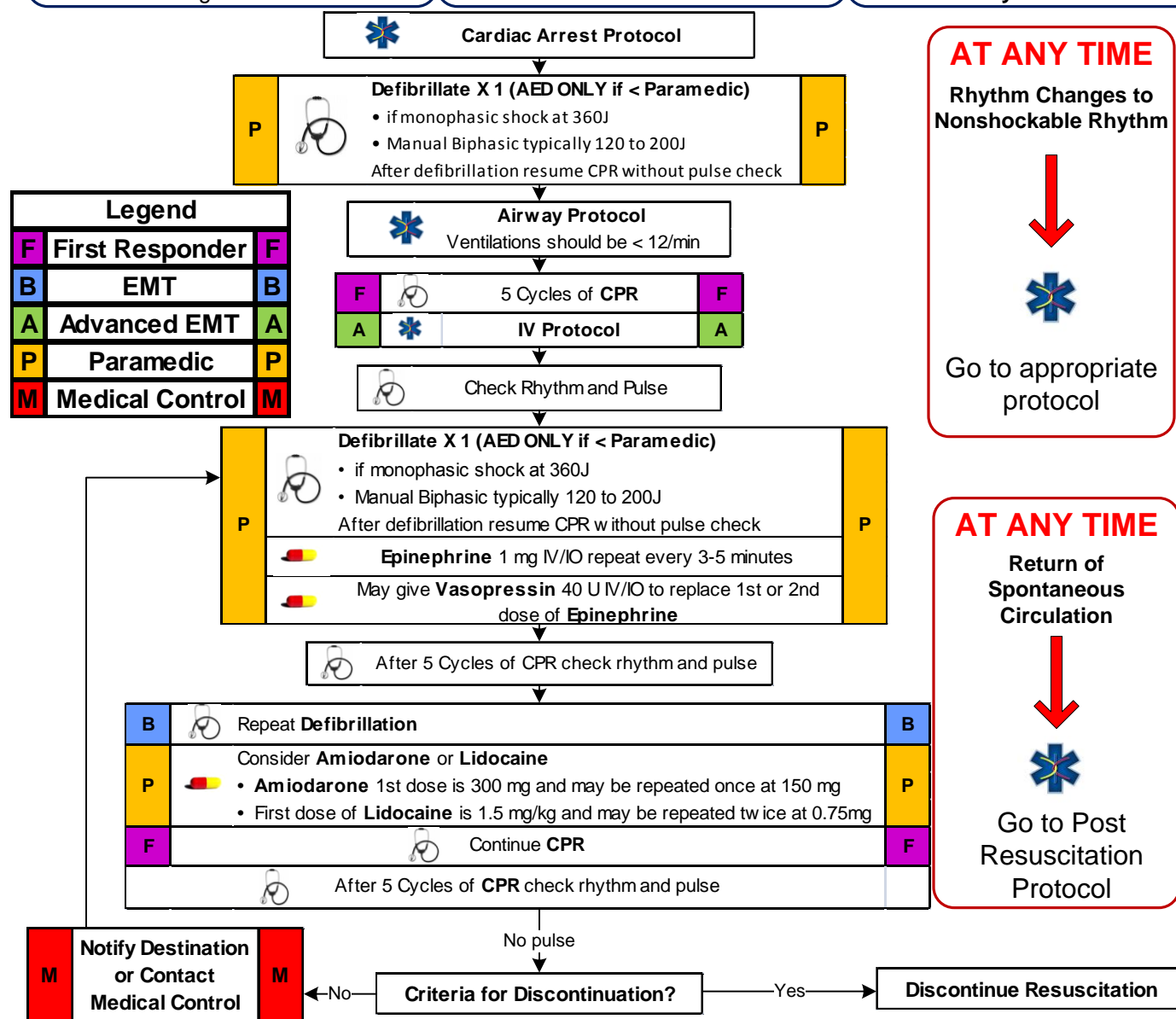
- Estimated down time
- Past medical history
- Medications
- Events leading to arrest
- Renal failure / dialysis
- DNR or living will

Signs and Symptoms

- Unresponsive, apneic, pulseless
- Ventricular fibrillation or ventricular tachycardia on ECG

Differential

- Asystole
- Artifact / Device failure
- Cardiac
- Endocrine / Metabolic
- Drugs
- Pulmonary



Pearls

- **Recommended Exam: Mental Status**
- If no IV, drugs that can be given down ET tube should have dose doubled and then flushed with 5 ml of Normal Saline. IV/IO is the preferred route when available.
- Reassess and document endotracheal tube placement and EtCO₂ frequently, after every move, and at transfer of care.
- Calcium and sodium bicarbonate if hyperkalemia is suspected (renal failure, dialysis).
- **Treatment priorities are: uninterrupted chest compressions, defibrillation, then IV access and airway control.**
- Polymorphic V-Tach (Torsades de Pointes) may benefit from administration of magnesium sulfate if available.
- Do not stop CPR to check for placement of ET tube or to give medicines.
- If arrest not witnessed by EMS then 5 cycles of CPR prior to 1st defibrillation.
- Effective CPR and prompt defibrillation are the keys to successful resuscitation.
- If BVM is ventilating the patient successfully, intubation should be deferred until rhythm has changed or 4 or 5 defibrillation sequences have been completed.



Ventricular Tachycardia

History

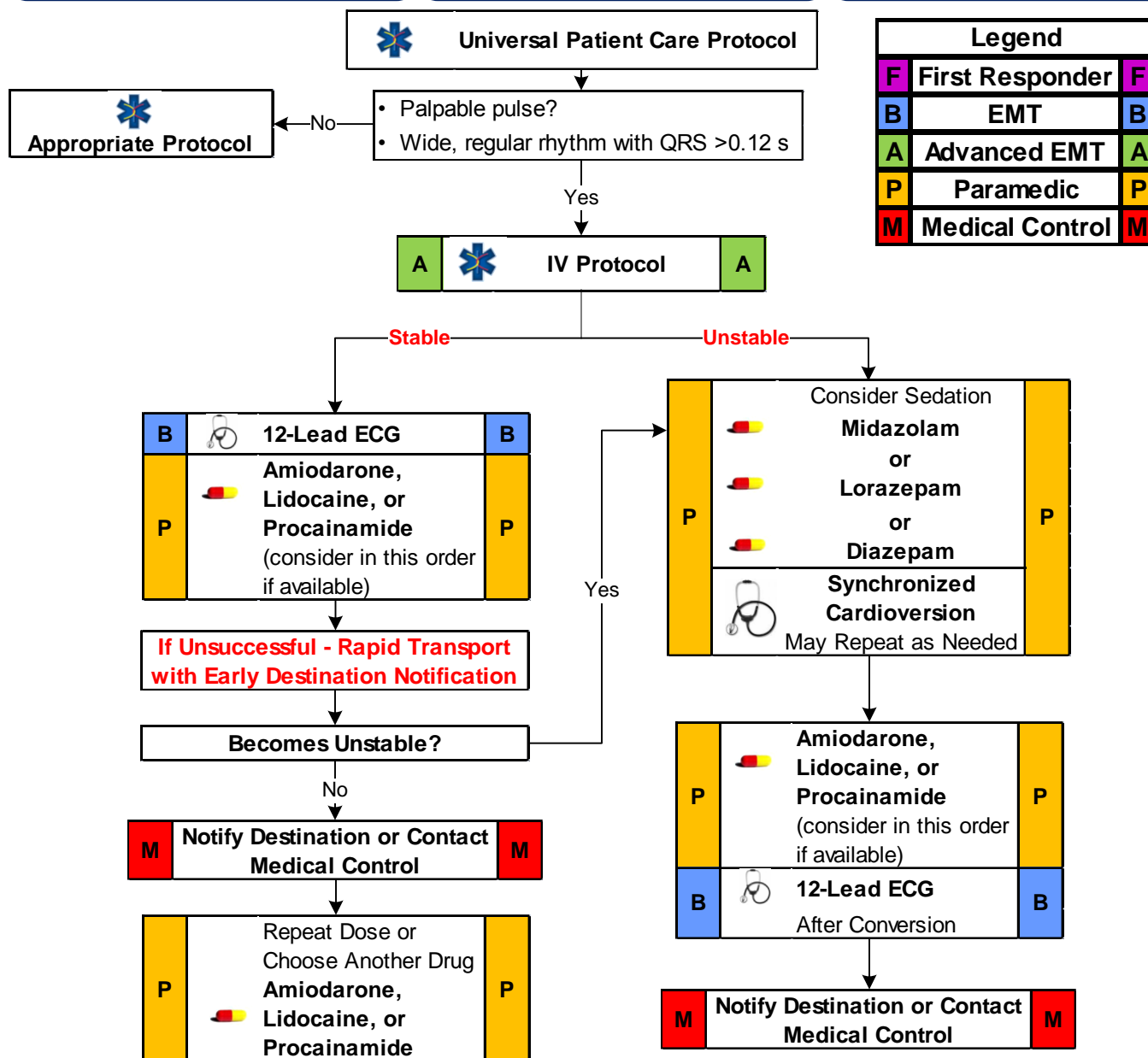
- Past medical history / medications, diet, drugs.
- Syncope / near syncope
- CHF
- Palpitations
- Pacemaker
- Allergies: lidocaine / novacaine

Signs and Symptoms

- Ventricular tachycardia on ECG (Runs or sustained)
- Conscious, rapid pulse
- Chest pain, shortness of breath
- Dizziness
- Rate usually 150 - 180 bpm for sustained V-Tach
- **QRS > .12 Sec**

Differential

- **Artifact / Device failure**
- **Cardiac**
- **Endocrine / Metabolic**
- **Drugs**
- **Pulmonary**



Pearls

- **Recommended Exam: Mental Status, Skin, Neck, Lung, Heart, Abdomen, Back, Extremities, Neuro**
- For witnessed / monitored ventricular tachycardia, try having patient cough.
- Polymorphic V-Tach (Torsades de Pointes) may benefit from the administration of magnesium sulfate if available.
- If presumed hyperkalemia (end-state renal disease, dialysis, etc.), administer Sodium Bicarbonate.
- Procainamide (if available) is no longer second line agent although it should not be given if there is history of CHF.



Vomiting and Diarrhea

History

- Age
- Time of last meal
- Last bowel movement/ emesis
- Improvement or worsening with food or activity
- Duration of problem
- Other sick contacts
- Past medical history
- Past surgical history
- Medications
- Menstrual history (pregnancy)
- Travel history
- Bloody emesis / diarrhea

Signs and Symptoms

- Pain
- Character of pain (constant, intermittent, sharp, dull, etc.)
- Distention
- Constipation
- Diarrhea
- Anorexia
- Radiation

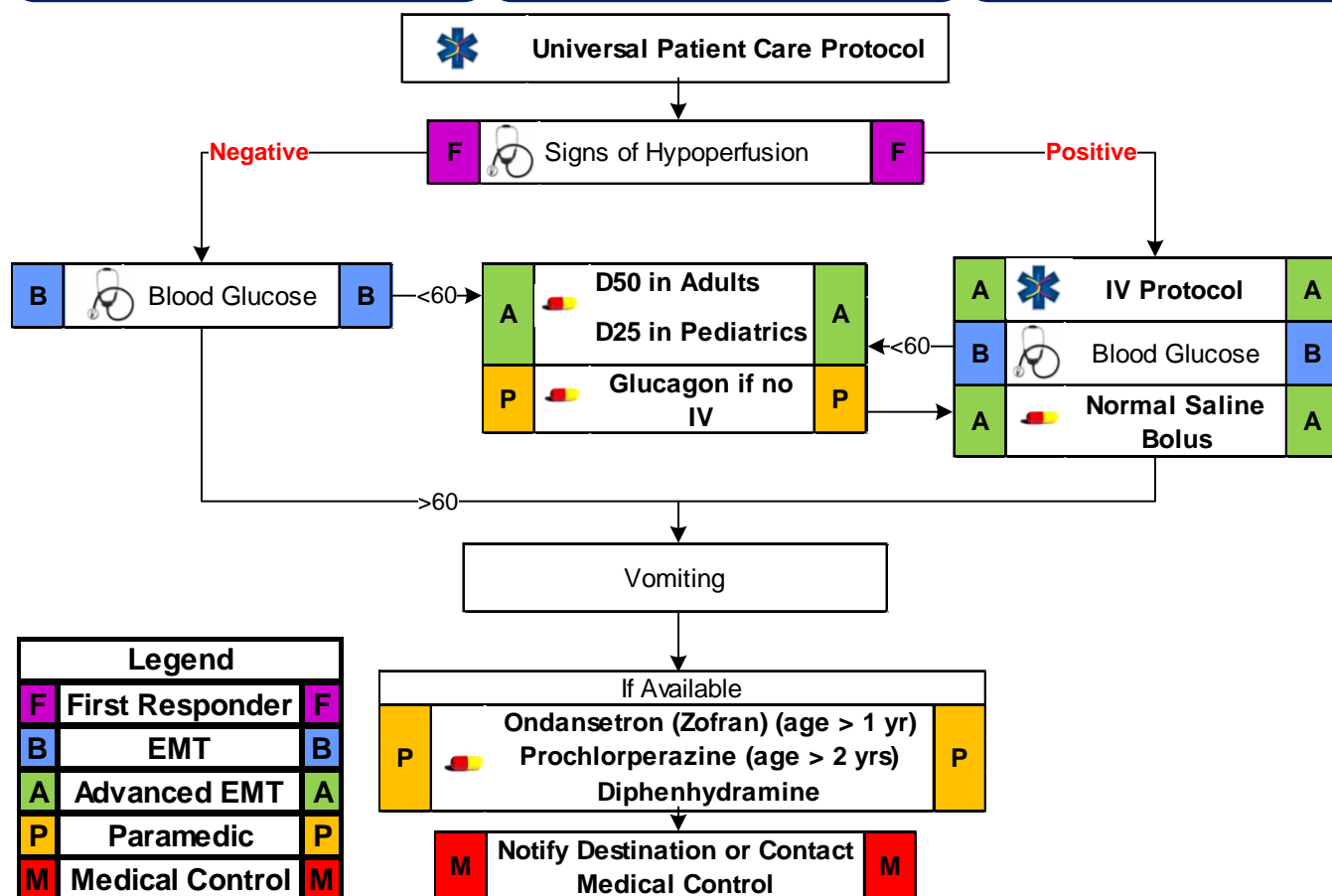
Associated symptoms:

(Helpful to localize source)

Fever, headache, blurred vision, weakness, malaise, myalgias, cough, headache, dysuria, mental status changes, rash

Differential

- **CNS** (increased pressure, headache, stroke, CNS lesions, trauma or hemorrhage, vestibular)
- **Myocardial infarction**
- **Drugs** (NSAID's, antibiotics, narcotics, chemotherapy)
- **GI or Renal disorders**
- **Diabetic ketoacidosis**
- **Gynecologic disease** (ovarian cyst, PID)
- **Infections** (pneumonia, influenza)
- **Electrolyte abnormalities**
- **Food or toxin induced**
- **Medication or Substance abuse**
- **Pregnancy**
- **Psychological**



Pearls

- **Recommended Exam: Mental Status, Skin, HEENT, Neck, Heart, Lungs, Abdomen, Back, Extremities, Neuro**
- Document the mental status and vital signs prior to administration of antiemetic medications.
- Beware of vomiting only in children. Pyloric stenosis, bowel obstruction, and CNS processes (bleeding, tumors, or increased CSF pressures) all often present with vomiting.



Childbirth / Labor

History

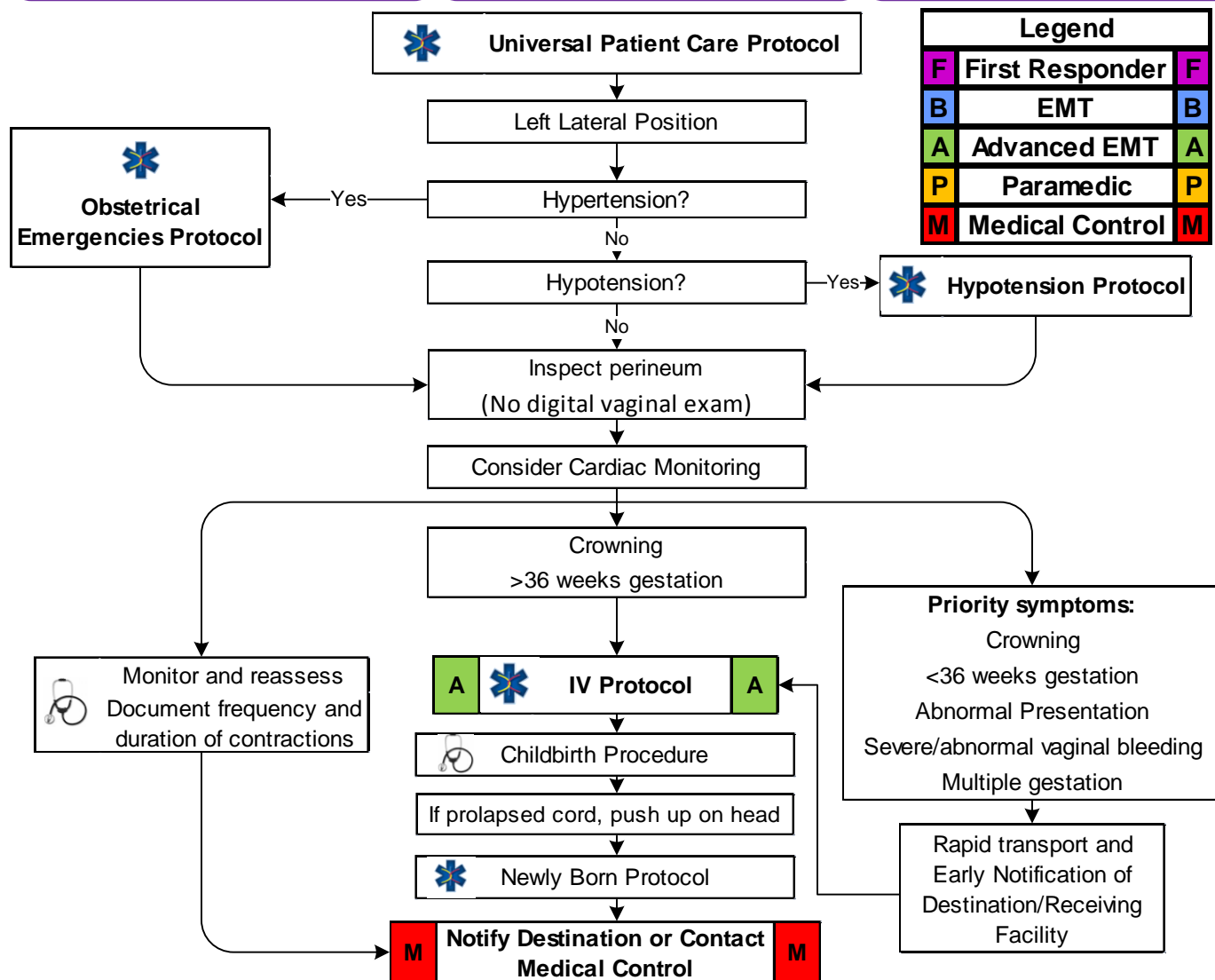
- Due date
- Time contractions started / how often
- Rupture of membranes
- Time / amount of any vaginal bleeding
- Sensation of fetal activity
- Past medical and delivery history
- Medications
- Gravida/Para Status
- High Risk pregnancy
- Illicit Drug Use

Signs and Symptoms

- Spasmodic pain
- Vaginal discharge or bleeding
- Crowning or urge to push
- Meconium

Differential

- **Abnormal presentation**
Buttock
Foot
Hand
- **Prolapsed cord**
- **Placenta previa**
- **Abruptio placenta**



Pearls

- **Recommended Exam (of Mother): Mental Status, Heart, Lungs, Abdomen, Neuro**
- Document all times (delivery, contraction frequency, and length).
- If maternal seizures occur, refer to the Obstetrical Emergencies Protocol.
- After delivery, massaging the uterus (lower abdomen) will promote uterine contraction and help to control postpartum bleeding.
- Some perineal bleeding is normal with any childbirth. Large quantities of blood or free bleeding are abnormal.
- Record APGAR at 1 minute and 5 minutes after birth. (APGAR = Appendix C)



Newly Born

History

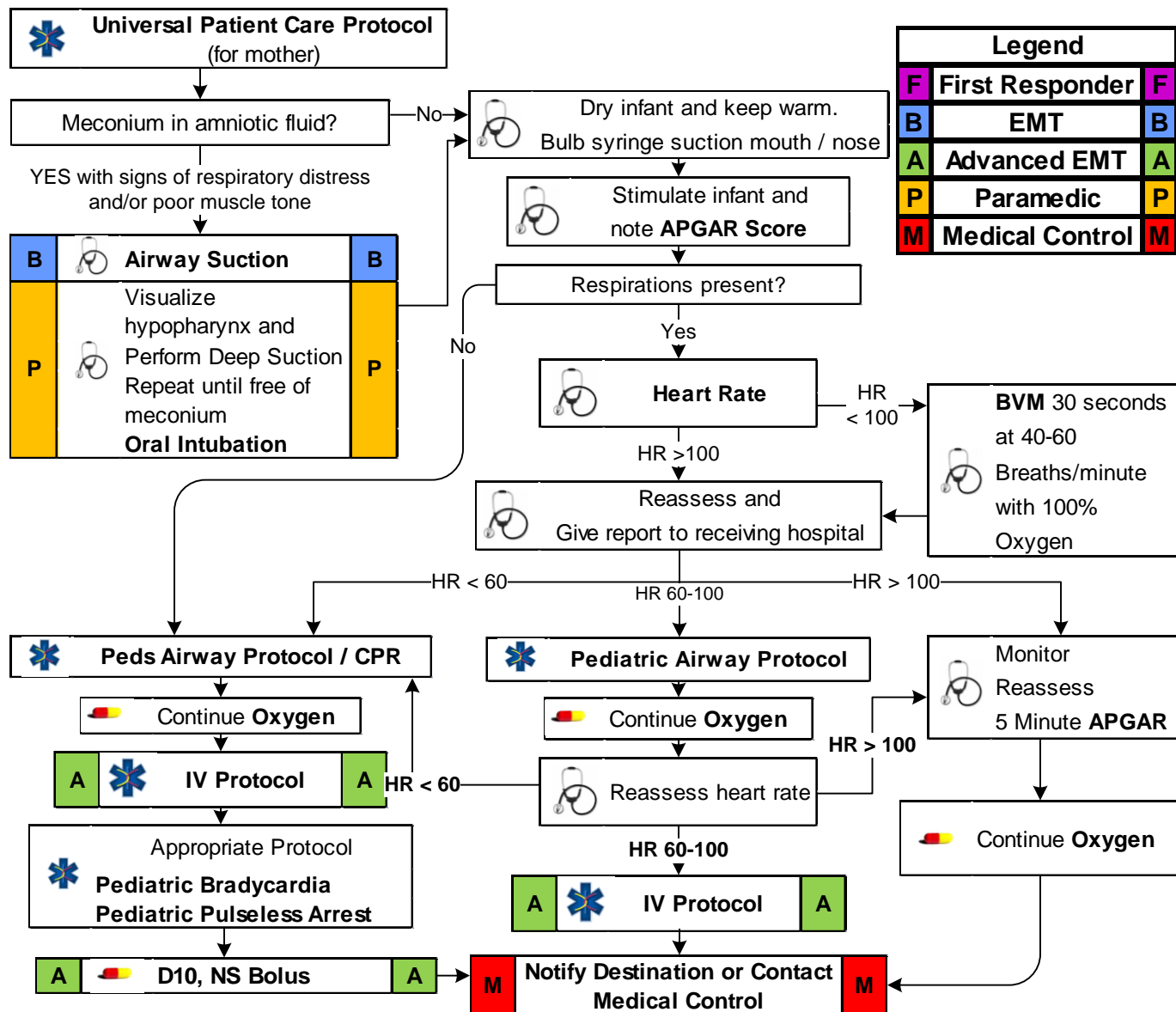
- Due date and gestational age
- Multiple gestation (twins etc.)
- Meconium
- Delivery difficulties
- Congenital disease
- Medications (maternal)
- Maternal risk factors
 - substance abuse
 - smoking

Signs and Symptoms

- Respiratory distress
- Peripheral cyanosis or mottling (normal)
- Central cyanosis (abnormal)
- Altered level of responsiveness
- Bradycardia

Differential

- **Airway failure**
 - Secretions
 - Respiratory drive
- **Infection**
- **Maternal medication effect**
- **Hypovolemia**
- **Hypoglycemia**
- **Congenital heart disease**
- **Hypothermia**



Pearls

- **Recommended Exam: Mental Status, Skin, HEENT, Neck, Chest, Heart, Abdomen, Extremities, Neuro**
- CPR in infants is 120 compressions/minute with a 3:1 compression to ventilation ratio
- It is extremely important to keep infant warm.
- Maternal sedation or narcotics will sedate infant.
- Consider hypoglycemia in infant.
- Document 1 and 5 minute APGAR in PCR (APGAR = Appendix C)
- D10 = D50 diluted (1 ml of D50 with 4 ml of Normal Saline)



Obstetrical Emergency

History

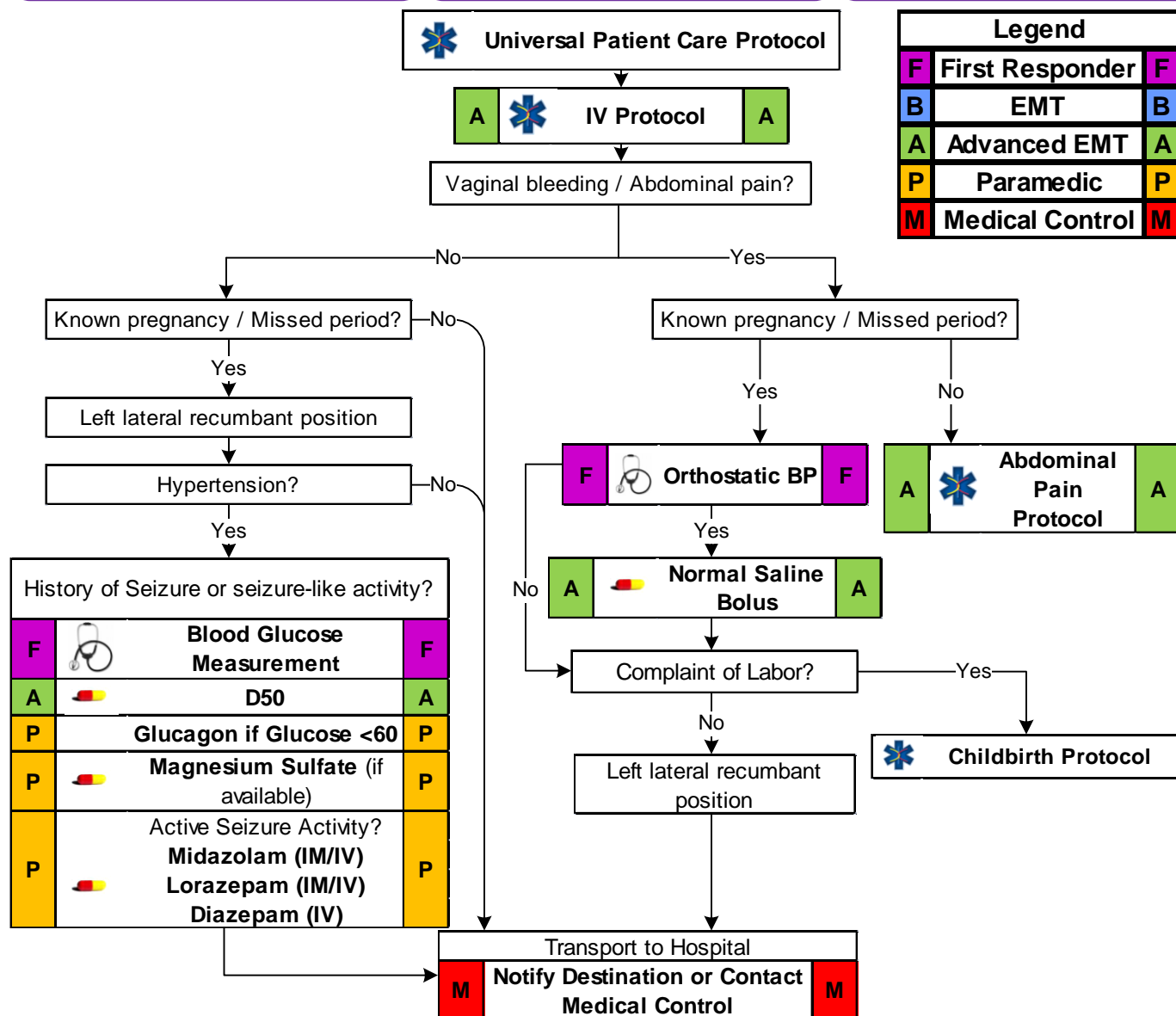
- Past medical history
- Hypertension meds
- Prenatal care
- Prior pregnancies / births
- Gravida / Para

Signs and Symptoms

- Vaginal bleeding
- Abdominal pain
- Seizures
- Hypertension
- Severe headache
- Visual changes
- Edema of hands and face

Differential

- Pre-eclampsia / Eclampsia
- Placenta previa
- Placenta abruptio
- Spontaneous abortion
- Ectopic Pregnancy



Pearls

- **Recommended Exam: Mental Status, Abdomen, Heart, Lungs, Neuro**
- Severe headache, vision changes, or RUQ pain may indicate preeclampsia.
- In the setting of pregnancy, hypertension is defined as a BP greater than 140 systolic or greater than 90 diastolic, or a relative increase of 30 systolic and 20 diastolic from the patient's normal (pre-pregnancy) blood pressure.
- Maintain patient in a left lateral position to minimize risk of supine hypotensive syndrome.
- Ask patient to quantify bleeding - number of pads used per hour.
- Any pregnant patient involved in a MVC should be seen immediately by a physician for evaluation and fetal monitoring.
- Magnesium may cause hypotension and decreased respiratory drive. Use with caution.



Pediatric Bradycardia

History

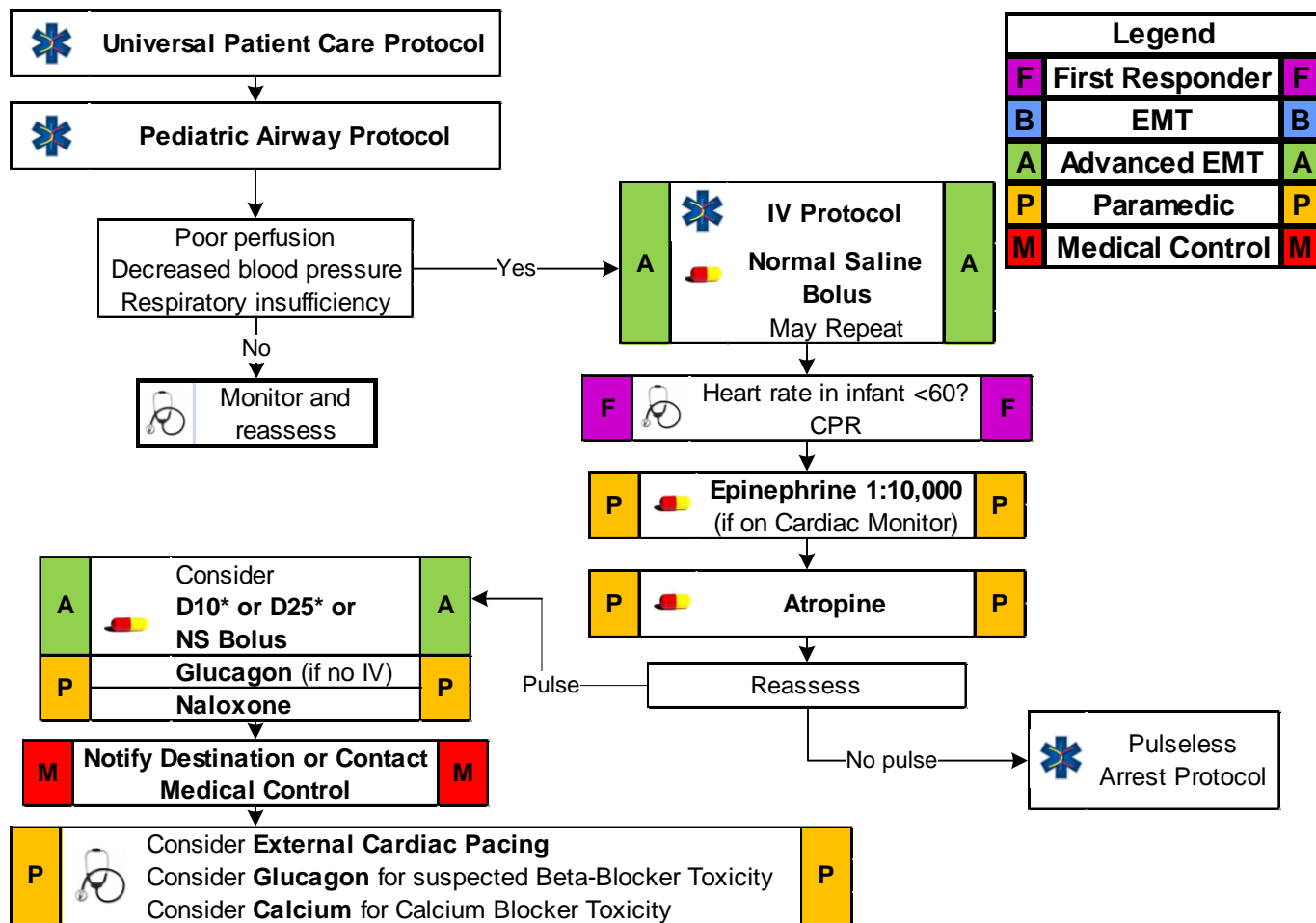
- Past medical history
- Foreign body exposure/swallowed
- Respiratory distress or arrest
- Apnea
- Possible toxic or poison exposure
- Congenital disease
- Medication (maternal or infant)

Signs and Symptoms

- Decreased heart rate
- Delayed capillary refill or cyanosis
- Mottled, cool skin
- Hypotension or arrest
- Altered level of consciousness

Differential

- **Respiratory failure**
Foreign body
Secretions
Infection (croup, epiglottitis)
- **Hypovolemia (dehydration)**
- **Congenital heart disease**
- **Trauma**
- **Tension pneumothorax**
- **Hypothermia**
- **Toxin or medication**
- **Hypoglycemia**
- **Acidosis**



Pearls

- **Recommended Exam: Mental Status, HEENT, Skin, Heart, Lungs, Abdomen, Back, Extremities, Neuro**
- **Use Broselow-Luten Tape for Drug Dosages.**
- Infant = < 1 year of age
- The majority of pediatric arrests are due to airway problems.
- Most maternal medications pass through breast milk to the infant.
- Hypoglycemia, severe dehydration and narcotic effects may produce bradycardia.
- Pediatric patients requiring external transcutaneous pacing require the use of pads appropriate for pediatric patients per the manufacturers guidelines.
- Minimum Atropine dose is 0.1 mg IV.
- * D10 used in Newborn/Infant and D25 used in Pediatric



Pediatric Head Trauma

History

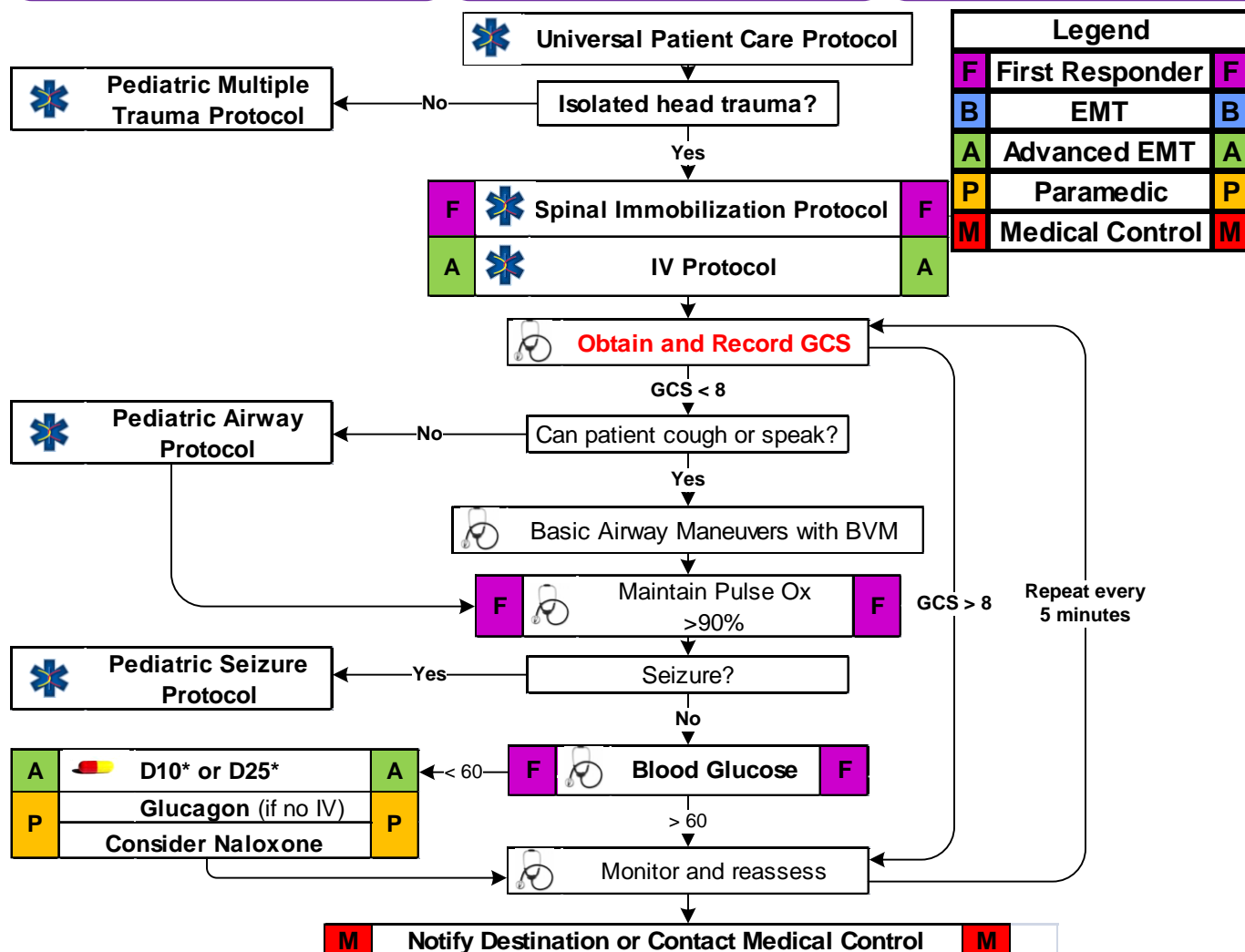
- Time of injury
- Mechanism (blunt vs. penetrating)
- Loss of consciousness
- Bleeding
- Past medical history
- Medications
- Evidence for multi-trauma
- Evidence of abuse

Signs and Symptoms

- Pain, swelling, bleeding
- Altered mental status
- Unconscious
- Respiratory distress / failure
- Vomiting
- Major traumatic mechanism of injury
- Seizure
- Gait Disturbance

Differential

- Skull fracture
- Brain injury (Concussion, Contusion, Hemorrhage or Laceration)
- Epidural hematoma
- Subdural hematoma
- Subarachnoid hemorrhage
- Spinal injury
- Abuse



Pearls

- **Recommended Exam: Mental Status, HEENT, Heart, Lungs, Abdomen, Extremities, Back, Neuro**
- If GCS < 12 consider air / rapid transport and if GCS < 8 intubation should be anticipated.
- Increased intracranial pressure (ICP) may cause hypertension and bradycardia (Cushing's Response).
- Hypotension usually indicates injury or shock unrelated to the head injury.
- The most important item to monitor and document is a change in the level of consciousness.
- Concussions are periods of confusion or LOC associated with trauma which may have resolved by the time EMS arrives. Any prolonged confusion or mental status abnormality which does not return to normal within 15 minutes or any documented loss of consciousness should be evaluated by a physician ASAP.
- * D10 used in Newborn/Infant and D25 used in Pediatric



Pediatric Hypotension

History

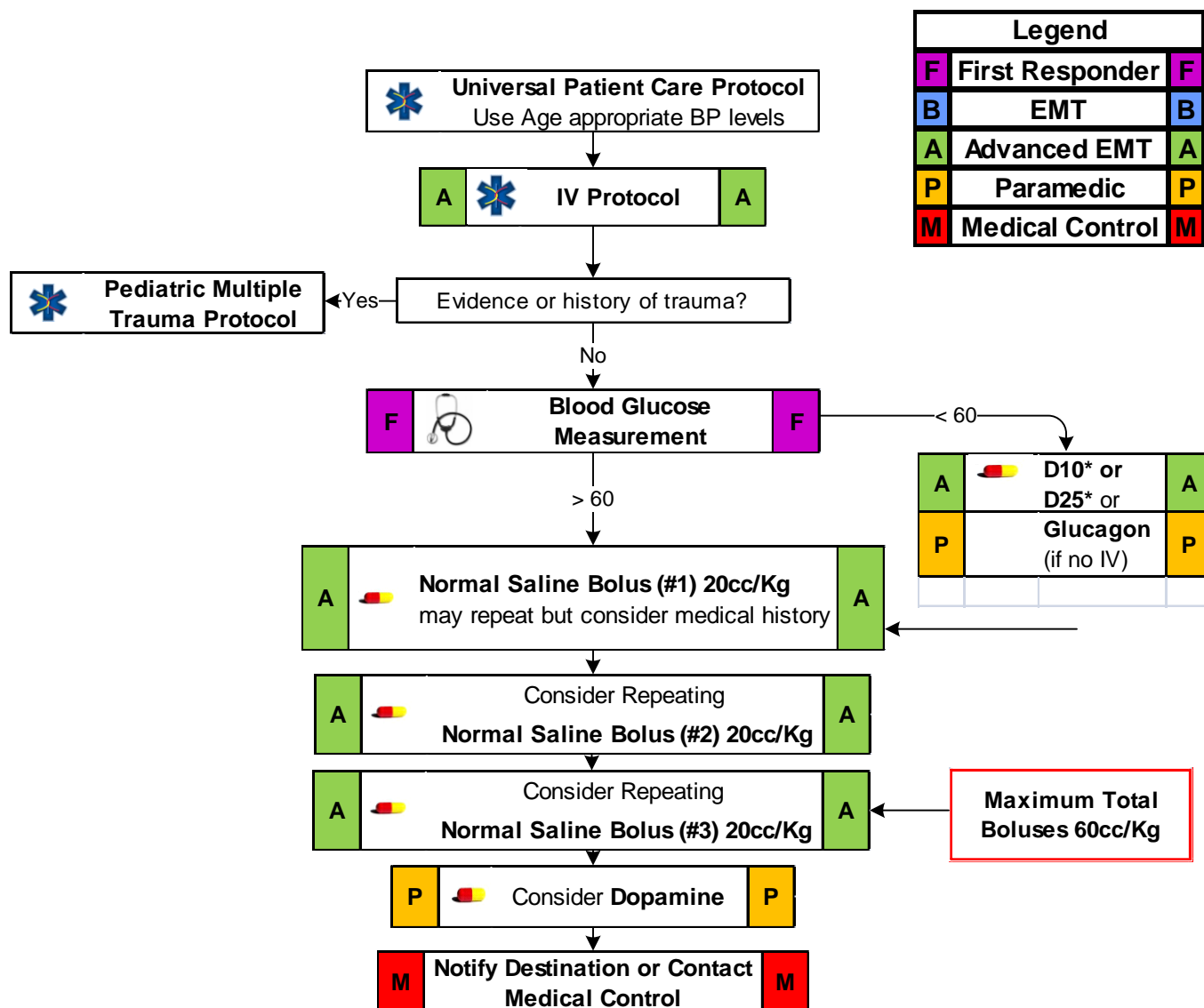
- Blood loss
- Fluid loss
 - Vomiting
 - Diarrhea
 - Fever
- Infection
- Congenital Defects
- Birth Complications

Signs and Symptoms

- Restlessness, confusion, weakness
- Dizziness
- Increased HR, rapid pulse
- Decreased BP
- Pale, cool, clammy skin
- Delayed capillary refill

Differential

- Trauma
- Infection
- Dehydration
 - Vomiting
 - Diarrhea
 - Fever
- Congenital heart disease
- Medication or Toxin
- Allergic reaction



Pearls

- **Recommended Exam: Mental Status, Skin, HEENT, Heart, Lung, Abdomen, Extremities, Back, Neuro**
- Consider all possible causes of shock and treat per appropriate protocol.
- Decreasing heart rate and hypotension occur late in children and are signs of imminent cardiac arrest.
- Most maternal medications pass through breast milk to the infant. Examples: Narcotics, Benzodiazepines.
- Consider possible allergic reaction or early anaphylaxis.
- If patient has a history of cardiac disease, (prematurity) chronic lung disease, or renal disease limit Normal Saline bolus to 10 ml/kg.
- * D10 used in Newborn/Infant and D25 used in Pediatric



Pediatric Multiple Trauma

History

- Time and mechanism of injury
- Height of any fall
- Damage to structure or vehicle
- Location in structure or vehicle
- Others injured or dead
- Speed and details of MVC
- Restraints / Protective equipment
 - Car Seat
 - Helmet
 - Pads
- Ejection
- Past medical history
- Medications

Signs and Symptoms

- Pain, swelling
- Deformity, lesions, bleeding
- Altered mental status
- Unconscious
- Hypotension or shock
- Cardiac/Respiratory Arrest

Differential (Life Threatening)

- **Chest**
 - Tension pneumothorax
 - Flail chest
 - Pericardial tamponade
 - Open chest wound
 - Hemothorax
- Intra-abdominal bleeding
- Pelvis / Femur fracture
- Spine fracture / Cord injury
- Head injury (see Head Trauma)
- Extremity fracture / dislocation
- HEENT (Airway obstruction)
- Hypothermia



Universal Patient Care Protocol



Pediatric Assessment Procedure focusing on initial ABC and level of responsiveness



Spinal Immobilization Protocol



Pediatric Airway Protocol if appropriate

Legend		
F	First Responder	F
B	EMT	B
A	Advanced EMT	A
P	Paramedic	P
M	Medical Control	M



Vital Signs including GCS

Abnormal

Normal

Rapid Transport to appropriate destination using

EMS System Trauma Plan

Limit Scene Time to 10 minutes Provide Early Notification

F	Splint Suspected Fractures Control External Hemorrhage	F
A	IV Protocol Normal Saline Bolus May repeat for hypotension	A
P	Tension Pneumothorax? Chest Decompression	P
	Consider Pediatric Head Injury Protocol	



Complete Pediatric Assessment

F	Splint Suspected Fractures Control External Hemorrhage	F
Transport to appropriate destination using EMS System Trauma Plan		
F	Continually Reassess	F



Notify Destination or Contact Medical Control

Pediatric and OB Protocols

Pearls

- **Recommended Exam: Mental Status, Skin, HEENT, Heart, Lung, Abdomen, Extremities, Back, Neuro**
- **Items in Red Text are key performance measures used in the EMS Acute Trauma Care Toolkit**
- **Transport Destination is chosen based on the EMS System Trauma Plan with EMS pre-arrival notification.**
- Mechanism is the most reliable indicator of serious injury. Examine all restraints / protective equipment for damage.
- In prolonged extrications or serious trauma consider air transportation for transport times.
- Do not overlook the possibility for child abuse.
- Scene times should not be delayed for procedures. These should be performed en route when possible.
- Bag valve mask is an acceptable method of managing the airway if pulse oximetry can be maintained above 90%.



Pediatric Pulseless Arrest

History

- Time of arrest
- Medical history
- Medications
- Possibility of foreign body
- Hypothermia

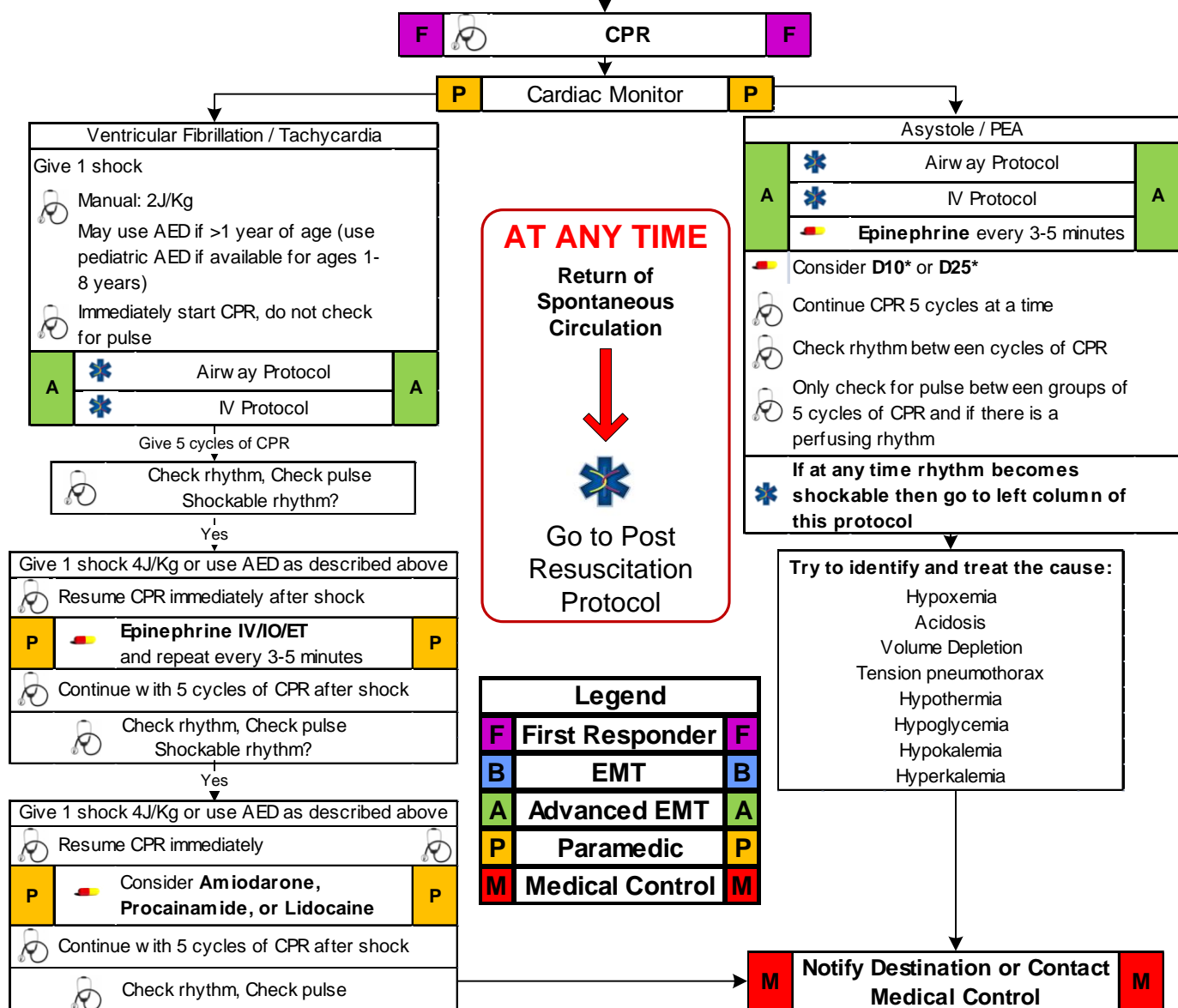
Signs and Symptoms

- Unresponsive
- Cardiac arrest

Differential

- **Respiratory failure**
Foreign body, Secretions, Infection (croup, epiglottitis)
- **Hypovolemia (dehydration)**
- **Congenital heart disease**
- **Trauma**
- **Tension pneumothorax, cardiac tamponade, pulmonary embolism**
- **Hypothermia**
- **Toxin or medication**
- **Electrolyte abnormalities (Glucose, K)**
- **Acidosis**

Universal Patient Care Protocol



Pearls

- **Recommended Exam: Mental Status, Heart, Lungs**
- Monophasic and Biphasic waveform defibrillators should use the same energy levels noted above.
- In order to be successful in pediatric arrests, a cause must be identified and corrected.
- Airway is the most important intervention. This should be accomplished immediately. Patient survival is often dependent on airway management success.
- * D10 used in Newborn/Infant and D25 used in Pediatric



Pediatric Respiratory Distress

History

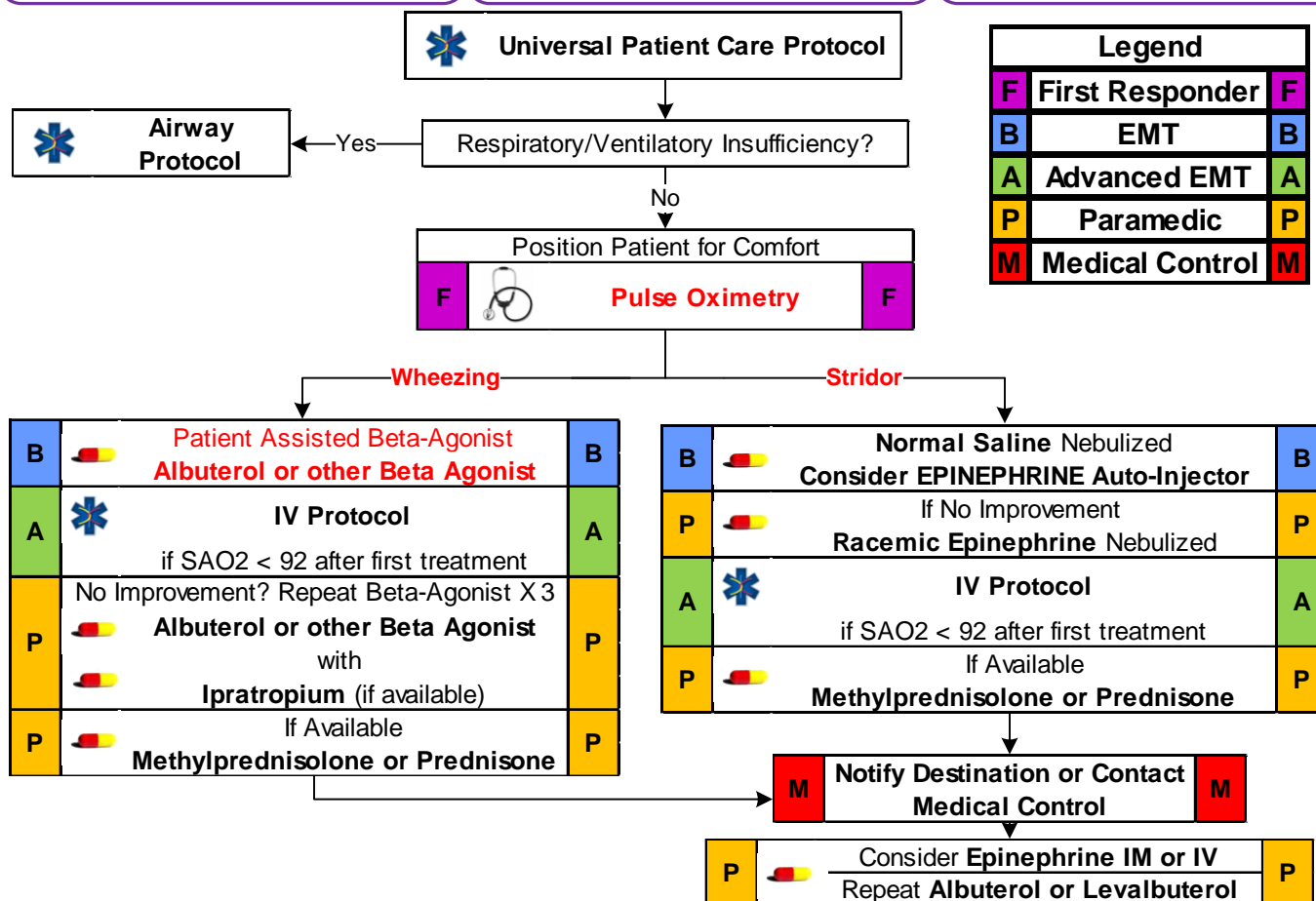
- Time of onset
- Possibility of foreign body
- Medical history
- Medications
- Fever or respiratory infection
- Other sick siblings / contacts
- History of trauma

Signs and Symptoms

- Wheezing or stridor
- Respiratory retractions
- Increased heart rate
- Altered level of consciousness
- Nasal flaring / tripod
- Anxious appearance

Differential

- Allergic Reaction
- Asthma
- Aspiration
- Foreign body
- Infection
 - Pneumonia
 - Croup
 - Epiglottitis
- Congenital heart disease
- Medication or Toxin
- Trauma



Pearls

- **Recommended Exam: Mental Status, HEENT, Skin, Neck, Heart, Lungs, Abdomen, Extremities, Neuro**
- **Items in Red Text are key performance measures used to evaluate protocol compliance and care.**
- **Pulse oximetry** should be monitored continuously if initial saturation is < 96%, or there is a decline in patient status despite normal pulse oximetry readings.
- Do not force a child into a position. They will protect their airway by their body position.
- The most important component of respiratory distress is airway control.
- Bronchiolitis is a viral infection typically affecting infants which results in wheezing which may not respond to beta-agonists. Consider Epinephrine if patient < 18 months and not responding to initial beta-agonist treatment.
- Croup typically affects children < 2 years of age. It is viral, possible fever, gradual onset, no drooling is noted.
- Epiglottitis typically affects children > 2 years of age. It is bacterial, with fever, rapid onset, possible stridor, patient wants to sit up to keep airway open, drooling is common. Airway manipulation may worsen the condition.
- Avoid direct laryngoscopy unless intubation is imminent.



Pediatric Seizure

History

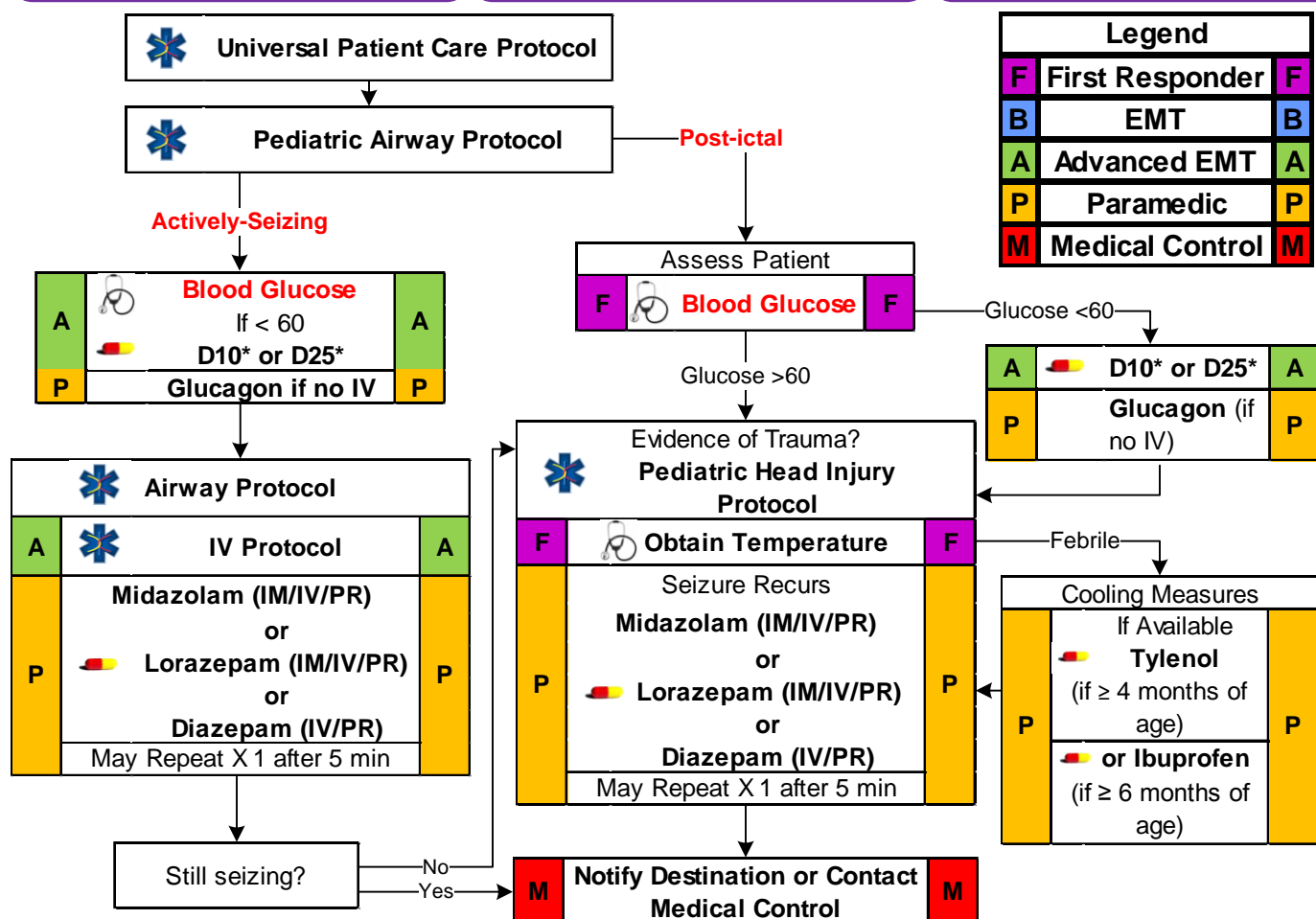
- Fever
- Prior history of seizures
- Seizure medications
- Reported seizure activity
- History of recent head trauma
- Congenital abnormality
- Consider pregnancy in teenage female

Signs and Symptoms

- Observed seizure activity
- Altered mental status
- Hot, dry skin or elevated body temperature

Differential

- **Fever**
- **Infection**
- **Head trauma**
- **Medication or Toxin**
- **Hypoxia or Respiratory failure**
- **Hypoglycemia**
- **Metabolic abnormality / acidosis**
- **Tumor**



Pediatric and OB Protocols

Pearls

- **Recommended Exam: Mental Status, HEENT, Heart, Lungs, Extremities, Neuro**
- **Items in Red Text are key performance measures used to evaluate protocol compliance and care**
- **Addressing the ABCs and verifying blood glucose is more important than stopping the seizure**
- **Avoiding hypoxemia is extremely important**
- **Status Epilepticus** is defined as two or more successive seizures without a period of consciousness or recovery. This is a true emergency requiring rapid airway control, treatment, and transport.
- **Grand mal seizures (generalized)** are associated with loss of consciousness, incontinence, and tongue trauma.
- **Focal seizures (petit mal)** effect only a part of the body and do not usually result in a loss of consciousness.
- **Jacksonian seizures** are seizures which start as a focal seizure and become generalized.
- Be prepared to assist ventilations especially if a benzodiazepine is used.
- If evidence or suspicion of trauma, spine should be immobilized.
- In an infant, a seizure may be the only evidence of a closed head injury.
- **Rectal Diazepam/Lorazepam:** Draw drug dose up in a 3 ml syringe. Remove needle from syringe and attached syringe to an IV extension tube. Cut off the distal end of the extension tube leaving about 3 or 4 inches of length. Insert tube in rectum and inject drug. Flush extension tube with 3 ml of air and remove.
- * D10 used in Newborn/Infant and D25 used in Pediatric



Pediatric Supraventricular Tachycardia

History

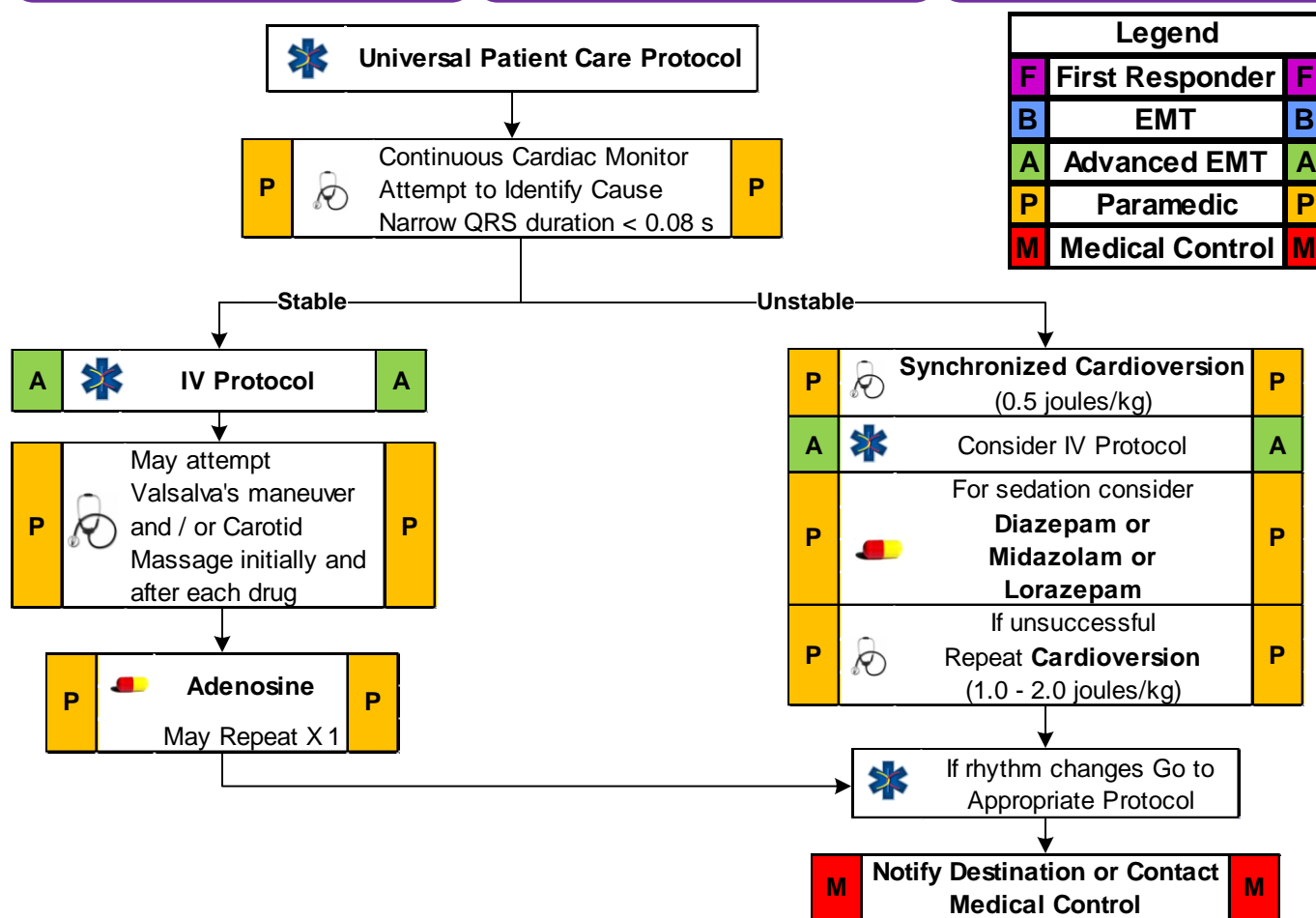
- Past medical history
- Medications or Toxic Ingestion (Aminophylline, Diet pills, Thyroid supplements, Decongestants, Digoxin)
- Drugs (nicotine, cocaine)
- Congenital Heart Disease
- Respiratory Distress
- Syncope or Near Syncope
- Prior Hx of SVT?

Signs and Symptoms

- Heart Rate: Child > 180/bpm
Infant > 220/bpm
- Pale or Cyanosis
- Diaphoresis
- Tachypnea
- Vomiting
- Hypotension
- Altered Level of Consciousness
- Pulmonary Congestion
- Syncope

Differential

- Heart disease (Congenital)
- Hypo / Hyperthermia
- Hypovolemia or Anemia
- Electrolyte imbalance
- Anxiety / Pain / Emotional stress
- Fever / Infection / Sepsis
- Hypoxia
- Hypoglycemia
- Medication / Toxin / Drugs (see Hx)
- Pulmonary embolus
- Trauma
- Tension Pneumothorax



Pearls

- **Recommended Exam: Mental Status, Skin, Neck, Lung, Heart, Abdomen, Back, Extremities, Neuro**
- Carefully evaluate the rhythm to distinguish Sinus Tachycardia, Supraventricular Tachycardia, and Ventricular Tachycardia
- Separating the child from the caregiver may worsen the child's clinical condition.
- Pediatric paddles should be used in children < 10 kg or Broselow-Luten color Purple
- Monitor for respiratory depression and hypotension associated if Diazepam or Midazolam is used.
- Continuous pulse oximetry is required for all SVT Patients if available.
- Document all rhythm changes with monitor strips and obtain monitor strips with each therapeutic intervention.
- As a rule of thumb, the maximum sinus tachycardia rate is 220 – the patient's age in years.



Bites and Envenomations

History

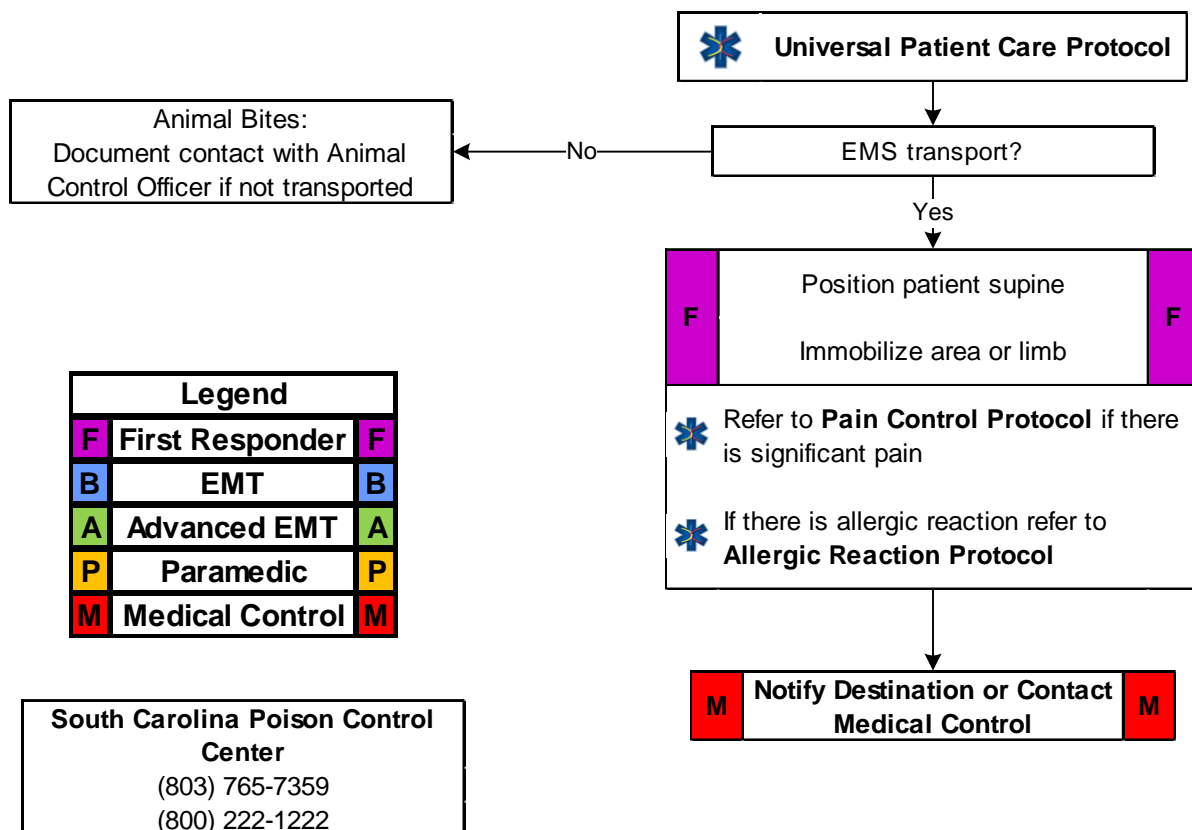
- Type of bite / sting
- Description or bring creature / photo with patient for identification
- Time, location, size of bite / sting
- Previous reaction to bite / sting
- Domestic vs. Wild
- Tetanus and Rabies risk
- Immunocompromised patient

Signs and Symptoms

- Rash, skin break, wound
- Pain, soft tissue swelling, redness
- Blood oozing from the bite wound
- Evidence of infection
- Shortness of breath, wheezing
- Allergic reaction, hives, itching
- Hypotension or shock

Differential

- **Animal bite**
- **Human bite**
- **Snake bite (poisonous)**
- **Spider bite (poisonous)**
- **Insect sting / bite (bee, wasp, ant, tick)**
- **Infection risk**



Pearls

- **Recommended Exam: Mental Status, Skin, Extremities (Location of injury), and a complete Neck, Lung, Heart, Abdomen, Back, and Neuro exam if systemic effects are noted**
- Human bites have higher infection rates than animal bites due to normal mouth bacteria.
- Carnivore bites are much more likely to become infected and all have risk of Rabies exposure.
- Cat bites may progress to infection rapidly due to a specific bacteria (*Pasteurella multocida*).
- Poisonous snakes in this area are generally of the pit viper family: rattlesnake, copperhead, and water moccasin.
 - Coral snake bites are rare: Very little pain but very toxic. "Red on yellow - kill a fellow, red on black - venom lack."
 - Amount of envenomation is variable, generally worse with larger snakes and early in spring.
 - If no pain or swelling, envenomation is unlikely (except for Coral snakes).
- Black Widow spider bites tend to be minimally painful, but over a few hours, muscular pain and severe abdominal pain may develop (spider is black with red hourglass on belly).
- Brown Recluse spider bites are minimally painful to painless. Little reaction is noted initially but tissue necrosis at the site of the bite develops over the next few days (brown spider with fiddle shape on back).
- Evidence of infection: swelling, redness, drainage, fever, red streaks proximal to wound.
- Immunocompromised patients are at an increased risk for infection: diabetes, chemotherapy, transplant patients.
- Consider contacting the South Carolina Poison Control Center for guidance (1-800-222-1222).



Burns: Thermal

History

- Type of exposure (heat, gas, chemical)
- Inhalation injury
- Time of Injury
- Past medical history and Medications
- Other trauma
- Loss of Consciousness
- Tetanus/Immunization status

Signs and Symptoms

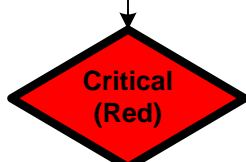
- Burns, pain, swelling
- Dizziness
- Loss of consciousness
- Hypotension/shock
- Airway compromise/distress
- singed facial or nasal hair
- Hoarseness / wheezing

Differential

- **Superficial (1st Degree)** red and painful
- **Partial Thickness (2nd Degree)** blistering
- **Full Thickness (3rd Degree)** painless/ charred or leathery skin
- **Thermal**
- **Chemical**
- **Electrical**
- **Radiation**

Legend		
F	First Responder	F
B	EMT	B
A	Advanced EMT	A
P	Paramedic	P
M	Medical Control	M

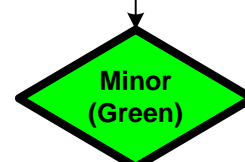
Universal Patient Care Protocol



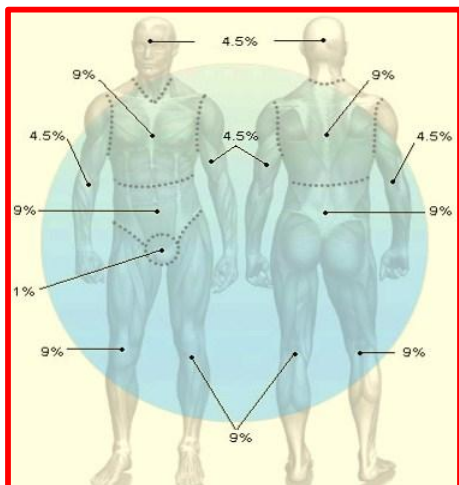
>15% TBSA 2nd/3rd Degree Burn
 Burns with Multiple Trauma
 Burns with definite airway compromise
 (When reasonable or reasonably accessible, transport to a Burn Center or Level I Trauma Center)



5-15% TBSA 2nd/3rd Degree Burn
 Suspected Inhalation injury or requiring intubation for airway stabilization
 Hypotension or GCS < 14
 (When reasonable or reasonably accessible, transport to a Burn Center or Level I Trauma Center)



< 5% TBSA 2nd/3rd Degree Burn
 No inhalation injury, Not Intubated, Normotensive GCS > 14
 (Transport to the Local Hospital)



Remove Rings, Bracelets, and other Constricting items
Airway Protocol
 Cover Burn with Dry sterile sheet or dressings

IV NS / RL, 2 large bore IVs, infuse total of 0.25 x kg body w.t. x % TBSA per hour for up to the first 8 hrs. **(More info below)**

Pain Control Protocol

Notify Destination or Contact Medical Control

Cool Down the Wound with Normal Saline
 Cover Burn with Dry sterile sheet or dressings

IV NS / RL, infuse total of 0.25 x kg body w.t. x % TBSA per hour for up to the first 8 hrs. **(More info below)**

Trauma Protocols

1. The IV solution should be changed to Lactated Ringers if it is available. It is preferred over Normal Saline.
2. Formula example and a rule of thumb is; an 80 kg patient with 50% TBSA will need 1000 cc of fluid per hour.

- **Critical or Serious Burns**
- **> 5-15% total body surface area (TBSA); 2nd or 3rd degree burns, or 3rd degree burns > 5% TBSA for any age group, or circumferential burns of extremities, or electrical or lightning injuries, or suspicion of abuse or neglect, or inhalation injury, or chemical burns, or burns of face, hands, perineum, or feet, or any burn requiring hospitalization.**

(These burns will require direct transport to a burn center, or transfer once seen at a local facility where the patient can be stabilized with interventions such as airway management or pain relief if this is not available in the field or the distance to a Burn Center is significant.)

Pearls

- Burn patients are Trauma Patients, evaluate for multisystem trauma.
- Assure whatever has caused the burn, is no longer contacting the injury. (Stop the burning process!)
- **Recommended Exam: Mental Status, HEENT, Neck, Heart, Lungs, Abdomen, Extremities, Back, and Neuro**
- Early intubation is required when the patient experiences significant inhalation injuries.
- Potential CO exposure should be treated with 100% oxygen. (For patients suffering from CO inhalation, transport to a hospital equipped with a hyperbaric chamber is indicated [when reasonably accessible].)
- Circumferential burns to extremities are dangerous due to potential vascular compromise secondary to soft tissue swelling.
- Burn patients are prone to hypothermia - never apply ice or cool burns, must maintain normal body temperature.
- Evaluate the possibility of child abuse with children and burn injuries.



Burns: Chemical and Electrical

History

- Type of exposure (heat, gas, chemical)
- Inhalation injury
- Time of Injury
- Past medical history and Medications
- Other trauma
- Loss of Consciousness
- Tetanus/Immunization status

Signs and Symptoms

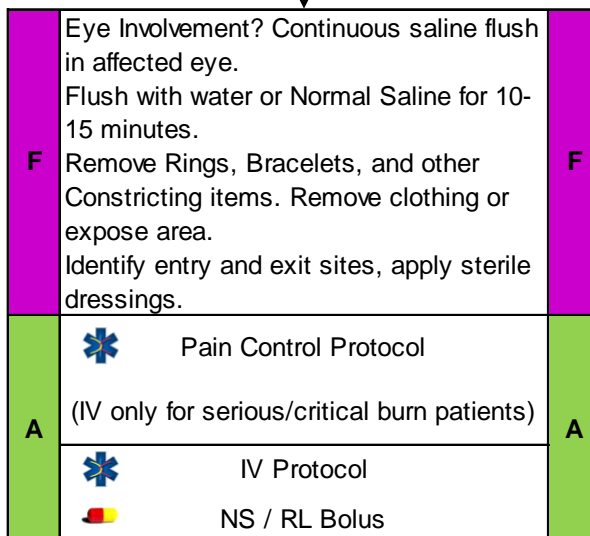
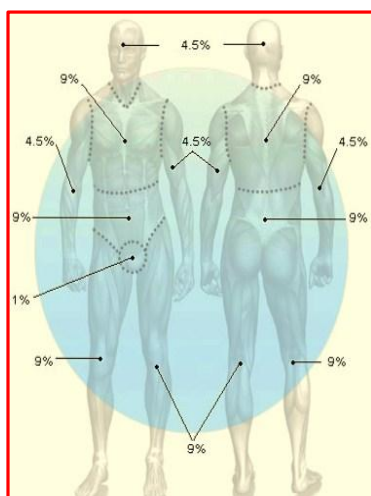
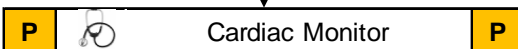
- Burns, pain, swelling
- Dizziness
- Loss of consciousness
- Hypotension/shock
- Airway compromise/distress
- singed facial or nasal hair
- Hoarseness / wheezing

Differential

- **Superficial (1st Degree)** red and painful
- **Partial Thickness (2nd Degree)** blistering
- **Full Thickness (3rd Degree)** painless/ charred or leathery skin
- **Thermal**
- **Chemical**
- **Electrical**
- **Radiation**



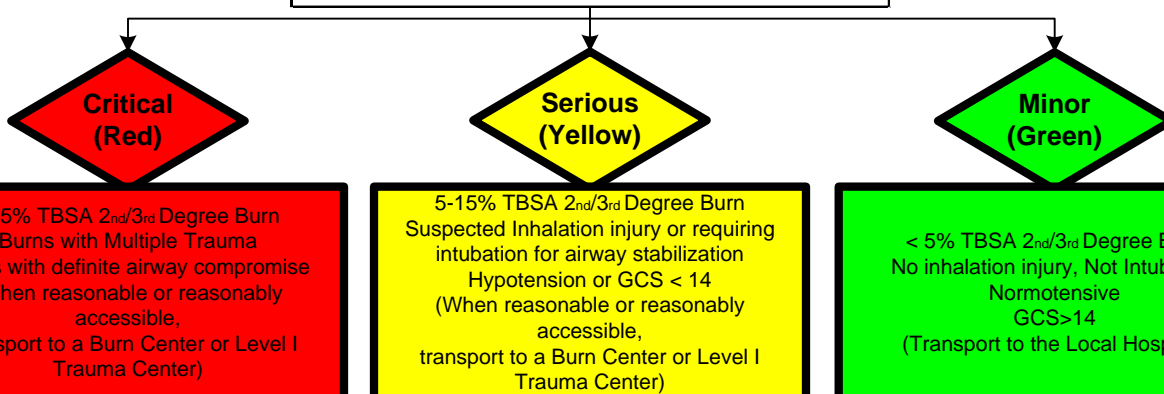
Universal Patient Care Protocol



Legend		
F	First Responder	F
B	EMT	B
A	Advanced EMT	A
P	Paramedic	P
M	Medical Control	M

Chemical and Electrical Burn Patients Must be Triageed using the Guidelines below and their care must conclude in the

Thermal Burn Protocol



Pearls Chemical

- Refer to Decontamination Standard Procedure (Skill) WMD Page
- Certainly 0.9% NaCl Soln or Sterile Water is preferred, however if it is not readily available, do not delay, use tap water for flushing the affected area or other immediate water sources. Flush the area as soon as possible with the cleanest readily available water or saline solution using copious amounts of fluids.

Pearls Electrical

- Do not contact the patient until you are certain the source of the electric shock has been disconnected.
- Attempt to locate contact points, (entry wound where the AC source contacted the patient, an exit at the ground point) both sites will generally be full thickness.
- Cardiac monitor, anticipate ventricular or atrial irregularity, to include Vtach, V-fib, heart blocks, etc.
- If able, identify the nature of the electrical source (AC vs. DC), the amount of voltage and the amperage the patient may have been exposed to during the electrical shock.



Drowning

History

- Submersion in water regardless of depth
- Possible trauma to C-spine
- Possible history of trauma ie: diving board
- Duration of immersion
- Temperature of water or possibility of hypothermia

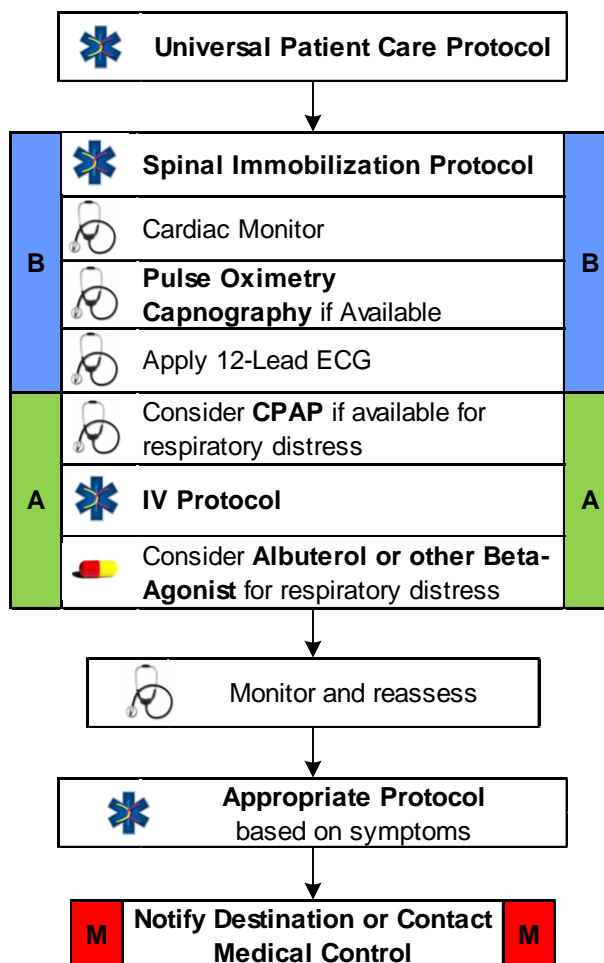
Signs and Symptoms

- Unresponsive
- Mental status changes
- Decreased or absent vital signs
- Vomiting
- Coughing
- Apnea
- Stridor
- Wheezing
- Rhales

Differential

- Trauma
- Pre-existing medical problem
- Pressure injury (diving)
- Barotrauma
- Decompression sickness
- Post-immersion syndrome
- Hypothermia

Legend		
F	First Responder	F
B	EMT	B
A	Advanced EMT	A
P	Paramedic	P
M	Medical Control	M



Pearls

- **Recommended Exam: Trauma Survey, Head, Neck, Chest, Abdomen, Pelvis, Back, Extremities, Skin, Neuro**
- Have a high index of suspicion for possible spinal injuries.
- With cold water no time limit -- resuscitate all. These patients have an increased chance of survival.
- **Some patients may develop delayed respiratory distress.**
- All victims should be transported for evaluation due to potential for worsening over the next several hours.
- **Drowning is a leading cause of death among would-be rescuers.**
- **Allow appropriately trained and certified rescuers to remove victims from areas of danger.**
- With pressure injuries (decompression / barotrauma), consider transport to or availability of a hyperbaric chamber.



Extremity Trauma

History

- Type of injury
- Mechanism: crush / penetrating / amputation
- Time of injury
- Open vs. closed wound / fracture
- Wound contamination
- Medical history
- Medications
- Tetanus Hx

Signs and Symptoms

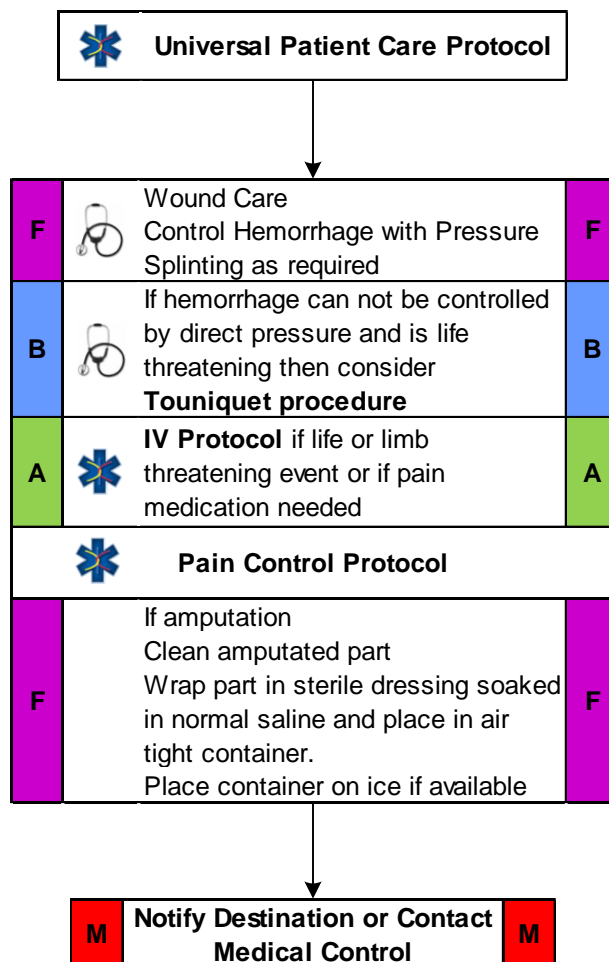
- Pain, swelling
- Deformity
- Altered sensation / motor function
- Diminished pulse / capillary refill
- Decreased extremity temperature

Differential

- Abrasion
- Contusion
- Laceration
- Sprain
- Dislocation
- Fracture
- Amputation

Legend

F	First Responder	F
B	EMT	B
A	Advanced EMT	A
P	Paramedic	P
M	Medical Control	M



Pearls

- **Recommended Exam: Mental Status, Extremity, Neuro**
- Peripheral neurovascular status is important.
- In amputations, time is critical. Transport and notify medical control immediately, so that the appropriate destination can be determined.
- Hip dislocations and knee and elbow fracture / dislocations have a high incidence of vascular compromise.
- Urgently transport any injury with vascular compromise.
- Blood loss may be concealed or not apparent with extremity injuries.
- Lacerations must be evaluated for repair within 6 hours from the time of injury.



Head Trauma

History

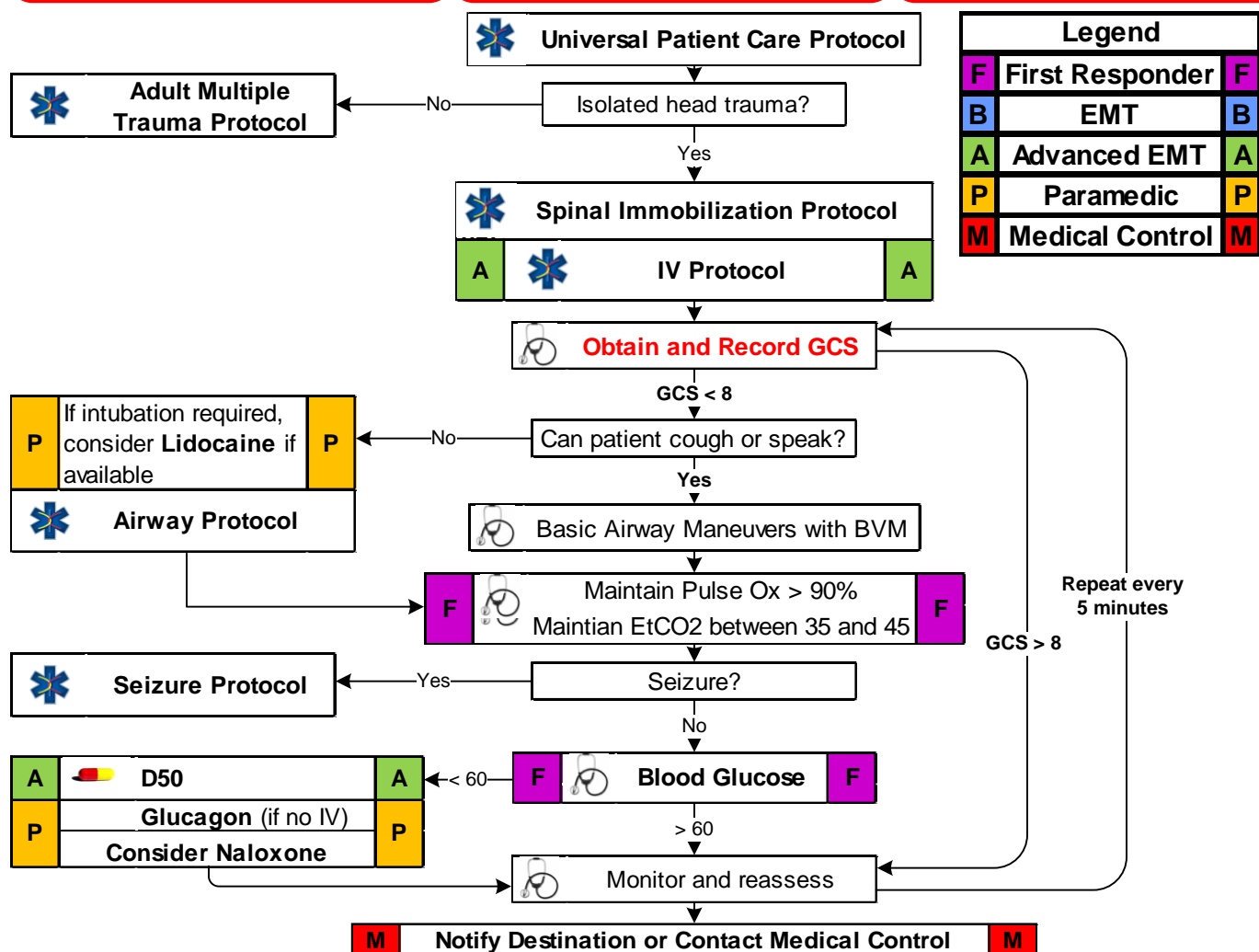
- Time of injury
- Mechanism (blunt vs. penetrating)
- Loss of consciousness
- Bleeding
- Past medical history
- Medications
- Evidence for multi-trauma

Signs and Symptoms

- Pain, swelling, bleeding
- Altered mental status
- Unconscious
- Respiratory distress / failure
- Vomiting
- Major traumatic mechanism of injury
- Seizure

Differential

- Skull fracture
- Brain injury (Concussion, Contusion, Hemorrhage or Laceration)
- Epidural hematoma
- Subdural hematoma
- Subarachnoid hemorrhage
- Spinal injury
- Abuse



Pearls

- **Recommended Exam: Mental Status, HEENT, Heart, Lungs, Abdomen, Extremities, Back, Neuro**
- If GCS < 12 consider air / rapid transport
- In the absence of Capnography, hyperventilate the patient (adult: 20 breaths/min, child: 30, infant: 35) only if ongoing evidence of brain herniation (blown pupil, decorticate or decerebrate posturing, or bradycardia)
- Increased intracranial pressure (ICP) may cause hypertension and bradycardia (Cushing's Response).
- Hypotension usually indicates injury or shock unrelated to the head injury and should be aggressively treated.
- The most important item to monitor and document is a change in the level of consciousness.
- Consider Restraints if necessary for patient's and/or personnel's protection per the Restraint Procedure.
- Limit IV fluids unless patient is hypotensive.
- Concussions are periods of confusion or LOC associated with trauma which may have resolved by the time EMS arrives. Any prolonged confusion or mental status abnormality which does not return to normal within 15 minutes or any documented loss of consciousness should be evaluated by a physician ASAP.
- In areas with short transport times, RSI/Drug-Assisted Intubation is not recommended for patients who are spontaneously breathing and who have oxygen saturations of greater than 90% with supplemental oxygen.



Hyperthermia

History

- Age
- Exposure to increased temperatures and / or humidity
- Past medical history / medications
- Extreme exertion
- Time and length of exposure
- Poor PO intake
- Fatigue and / or muscle cramping
- EtOH / Illicit Drug Use

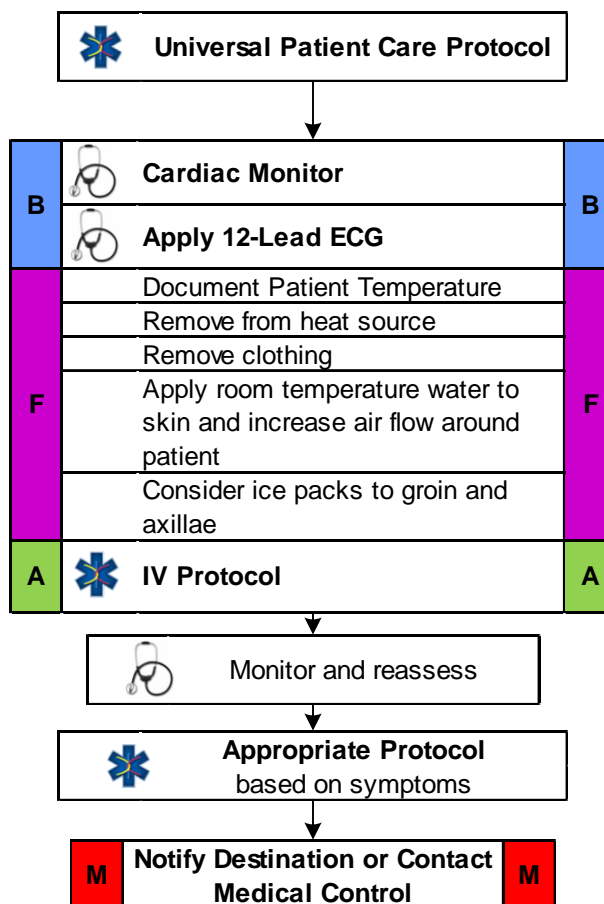
Signs and Symptoms

- Altered mental status or unconsciousness
- Hot, dry or sweaty skin
- Hypotension or shock
- Seizures
- Nausea

Differential

- **Fever (Infection)**
- **Dehydration**
- **Medications/Drugs**
- **Hyperthyroidism (Storm)**
- **Delirium tremens (DT's)**
- **Heat cramps**
- **Heat exhaustion**
- **Heat stroke**
- **CNS lesions or tumors**

Legend		
F	First Responder	F
B	EMT	B
A	Advanced EMT	A
P	Paramedic	P
M	Medical Control	M



Pearls

- **Recommended Exam: Mental Status, Skin, HEENT, Heart, Lungs, Neuro**
- Extremes of age are more prone to heat emergencies (i.e. young and old).
- Predisposed by use of: tricyclic antidepressants, phenothiazines, anticholinergic medications, and alcohol.
- Cocaine, Amphetamines, and Salicylates may elevate body temperatures.
- Sweating generally disappears as body temperature rises above 104° F (40° C).
- Intense shivering may occur as patient is cooled.
- **Heat Cramps** consists of benign muscle cramping 2° to dehydration and is not associated with an elevated temperature.
- **Heat Exhaustion** consists of dehydration, salt depletion, dizziness, fever, mental status changes, headache, cramping, nausea and vomiting. Vital signs usually consist of tachycardia, hypotension, and an elevated temperature.
- **Heat Stroke** consists of dehydration, tachycardia, hypotension, temperature >104° F (40° C), and an altered mental status.



Hypothermia

History

- Past medical history
- Medications
- Exposure to environment even in normal temperatures
- Exposure to extreme cold
- Extremes of age
- Drug use: Alcohol, barbituates
- Infections / Sepsis
- Length of exposure / Wetness

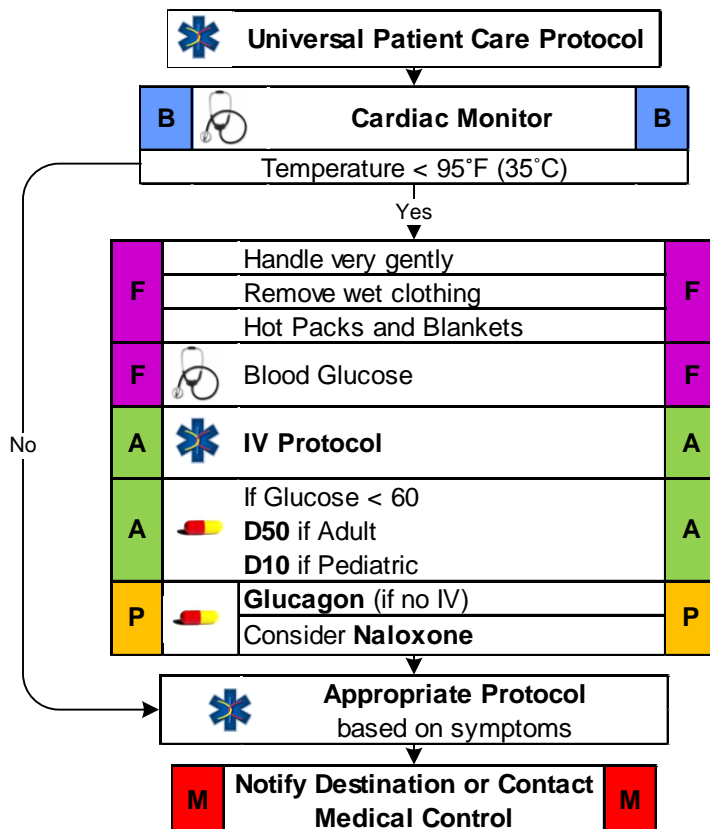
Signs and Symptoms

- Cold, clammy
- Shivering
- Mental status changes
- Extremity pain or sensory abnormality
- Bradycardia
- Hypotension or shock

Differential

- Sepsis
- Environmental exposure
- Hypoglycemia
- CNS dysfunction
 - Stroke
 - Head injury
 - Spinal cord injury

Legend		
F	First Responder	F
B	EMT	B
A	Advanced EMT	A
P	Paramedic	P
M	Medical Control	M



Pearls

- **Recommended Exam: Mental Status, Heart, Lungs, Abdomen, Extremities, Neuro**
- **NO PATIENT IS DEAD UNTIL WARM AND DEAD.**
- Defined as core temperature < 35°C (95°F).
- Extremes of age are more susceptible (i.e. young and old).
- With temperature less than 30°C (86°F) ventricular fibrillation is common cause of death. Handling patients gently may prevent this.
- If the temperature is unable to be measured, treat the patient based on the suspected temperature.
- Hypothermia may produce severe bradycardia so take at least 45 second to palpate a pulse.
- Hot packs can be activated and placed in the armpit and groin area if available. Care should be taken not to place the packs directly against the patient's skin.
- Consider withholding CPR if patient has organized rhythm or has other signs of life. Discuss with **Medical Control**.
- Intubation can cause ventricular fibrillation so it should be done gently by most experienced person.
- Do not hyperventilate the patient as this can cause ventricular fibrillation.
- If the patient is below 30°C or 86°F then only defibrillate 1 time if defibrillation is required. Normal defibrillation procedure may resume once patient reaches 30°C or 86°F.
- Below 30°C (86°F) antiarrhythmics may not work and if given should be given at reduced intervals. Contact medical control before they are administered.
- Below 30°C or (86°F) pacing should not be done



Multiple Trauma

History

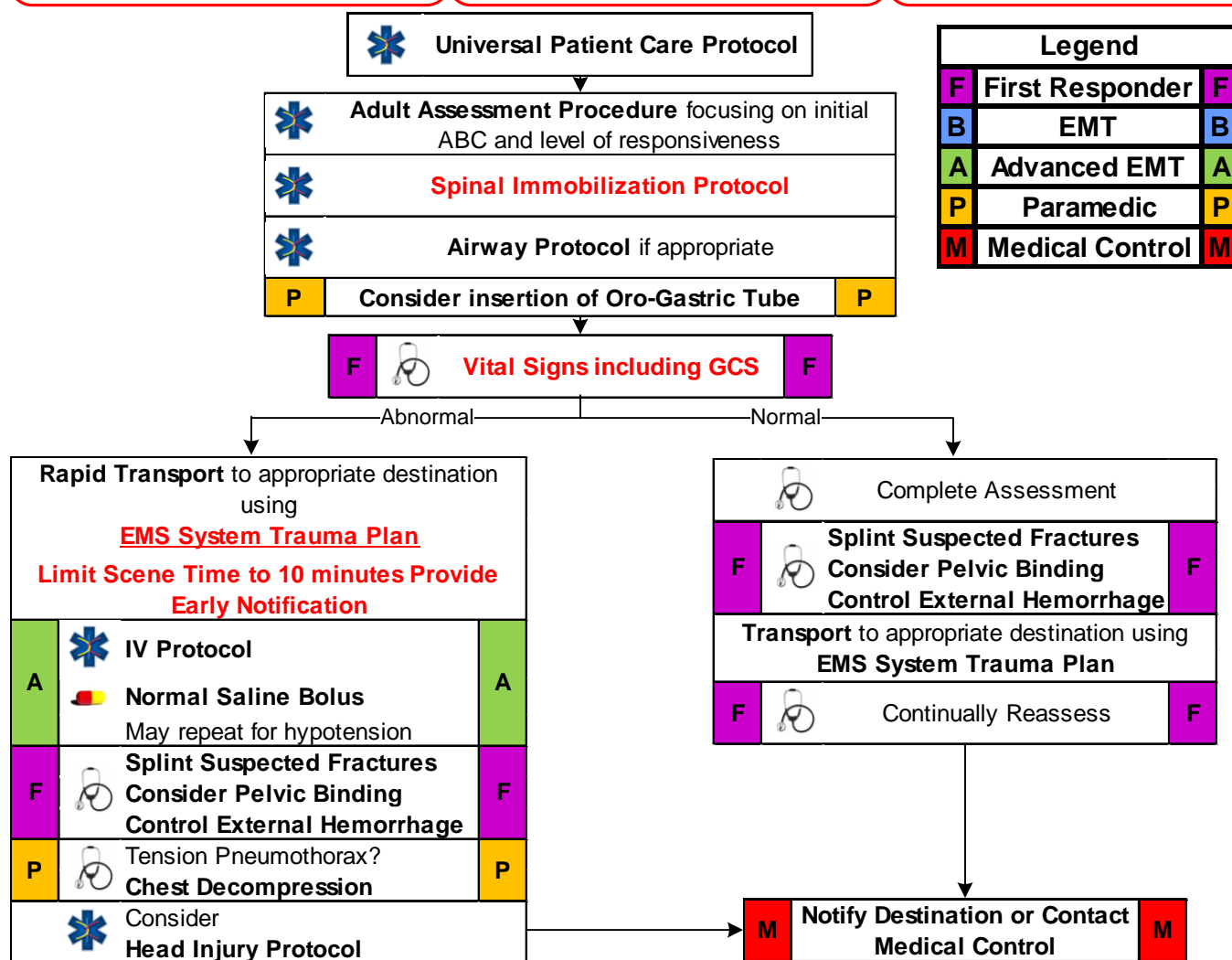
- Time and mechanism of injury
- Damage to structure or vehicle
- Location in structure or vehicle
- Others injured or dead
- Speed and details of MVC
- Restraints / protective equipment
- Past medical history
- Medications

Signs and Symptoms

- Pain, swelling
- Deformity, lesions, bleeding
- Altered mental status or unconscious
- Hypotension or shock
- Arrest

Differential (Life threatening)

- Chest
 - Tension pneumothorax
 - Flail chest
 - Pericardial tamponade
 - Open chest wound
 - Hemothorax
- Intra-abdominal bleeding
- Pelvis / Femur fracture
- Spine fracture / Cord injury
- Head injury (see Head Trauma)
- Extremity fracture / Dislocation
- HEENT (Airway obstruction)
- Hypothermia



Pearls

- **Recommended Exam: Mental Status, Skin, HEENT, Heart, Lung, Abdomen, Extremities, Back, Neuro**
- **Items in Red Text are key performance measures used in the EMS Acute Trauma Care Toolkit**
- **Transport Destination is chosen based on the EMS System Trauma Plan with EMS pre-arrival notification.**
- Geriatric patients should be evaluated with a high index of suspicion. Often occult injuries are more difficult to recognize and patients can decompensate unexpectedly with little warning.
- Mechanism is the most reliable indicator of serious injury.
- In prolonged extrications or serious trauma, consider air transportation for transport times and the ability to give blood.
- Do not overlook the possibility of associated domestic violence or abuse.
- Scene times should not be delayed for procedures. These should be performed en route when possible. Rapid transport of the unstable trauma patient is the goal.
- Bag valve mask is an acceptable method of managing the airway if pulse oximetry can be maintained above 90%



WMD-Nerve Agent Protocol

History

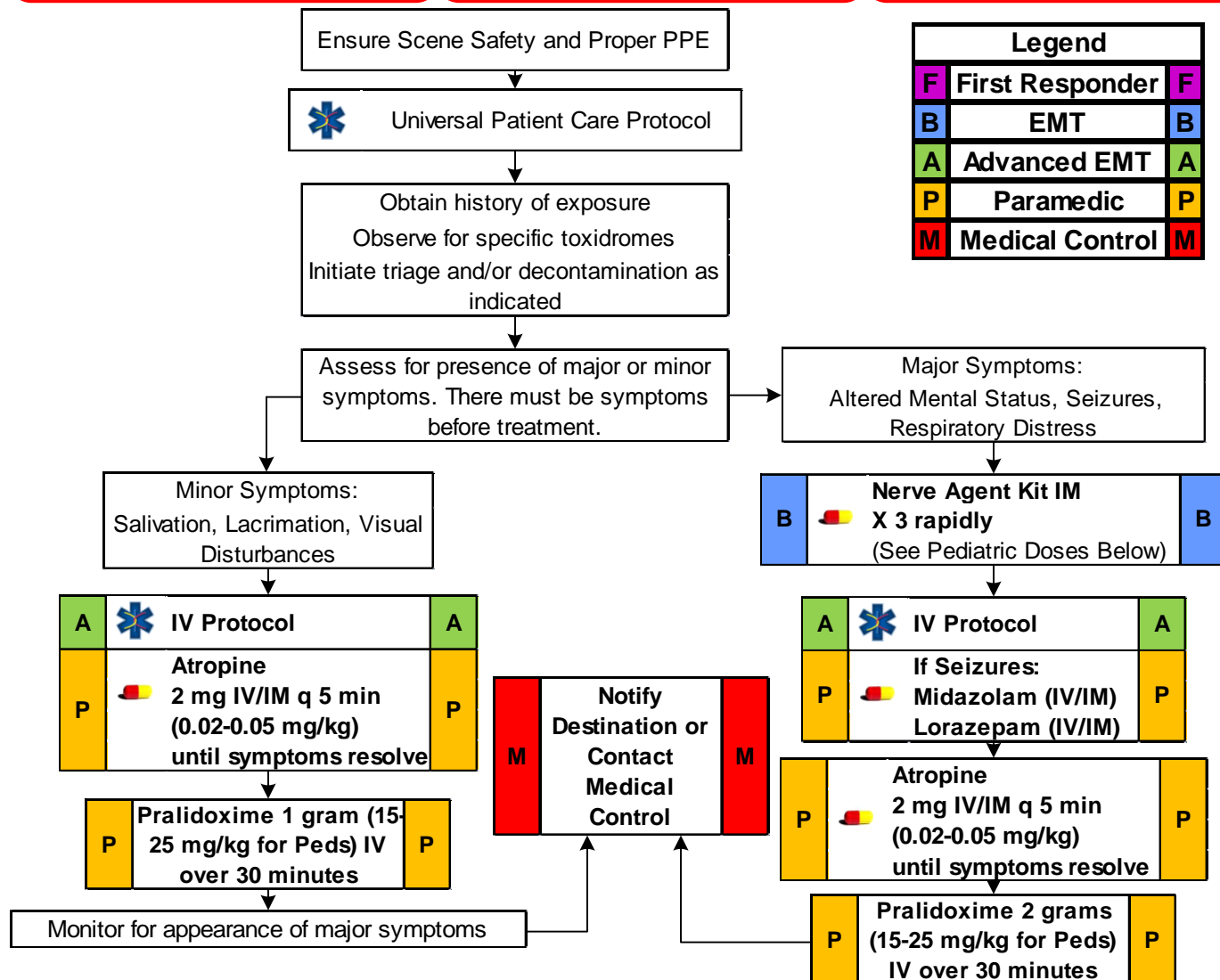
- Exposure to chemical, biologic, radiologic, or nuclear hazard
- Potential exposure to unknown substance/hazard

Signs and Symptoms

- Visual Disturbances
- Headache
- Nausea/Vomiting
- Salivation
- Lacrimation
- Respiratory Distress
- Diaphoresis
- Seizure Activity
- Respiratory Arrest

Differential

- Nerve agent exposure (e.g., VX, Sarin, Soman, etc.)
- Organophosphate exposure (pesticide)
- Vesicant exposure (e.g., Mustard Gas, etc.)
- Respiratory Irritant Exposure (e.g., Hydrogen Sulfide, Ammonia, Chlorine, etc.)



Trauma Protocols

Pearls

- In the face of a bona fide attack, begin with 1 Nerve Agent Kit for patients less than 7 years of age, 2 Nerve Agent Kits from 8 to 14 years of age, and 3 Nerve Agent Kits for patients 15 years of age and over.
- If Triage/MCI issues exhaust supply of Nerve Agent Kits, use pediatric atropens (if available). Use the 0.5 mg dose if patient is less than 40 pounds (18 kg), 1 mg dose if patient weighs between 40 to 90 pounds (18 to 40 kg), and 2 mg dose for patients greater than 90 pounds (>40 kg).
- Follow local HAZMAT protocols for decontamination and use of personal protective equipment
- For patients with major symptoms, there is no limit for atropine dosing.
- Carefully evaluate patients to ensure they are not reacting from exposure to another agent (e.g., narcotics, vesicants, etc.)
- Each Nerve Agent Kit contains 600 mg of Pralidoxime (2-PAM) and 2 mg of Atropine**
- The main symptom that the atropine addresses is excessive secretions so atropine should be given until salivation improves.



Field Triage and Bypass



Universal Patient Care Protocol



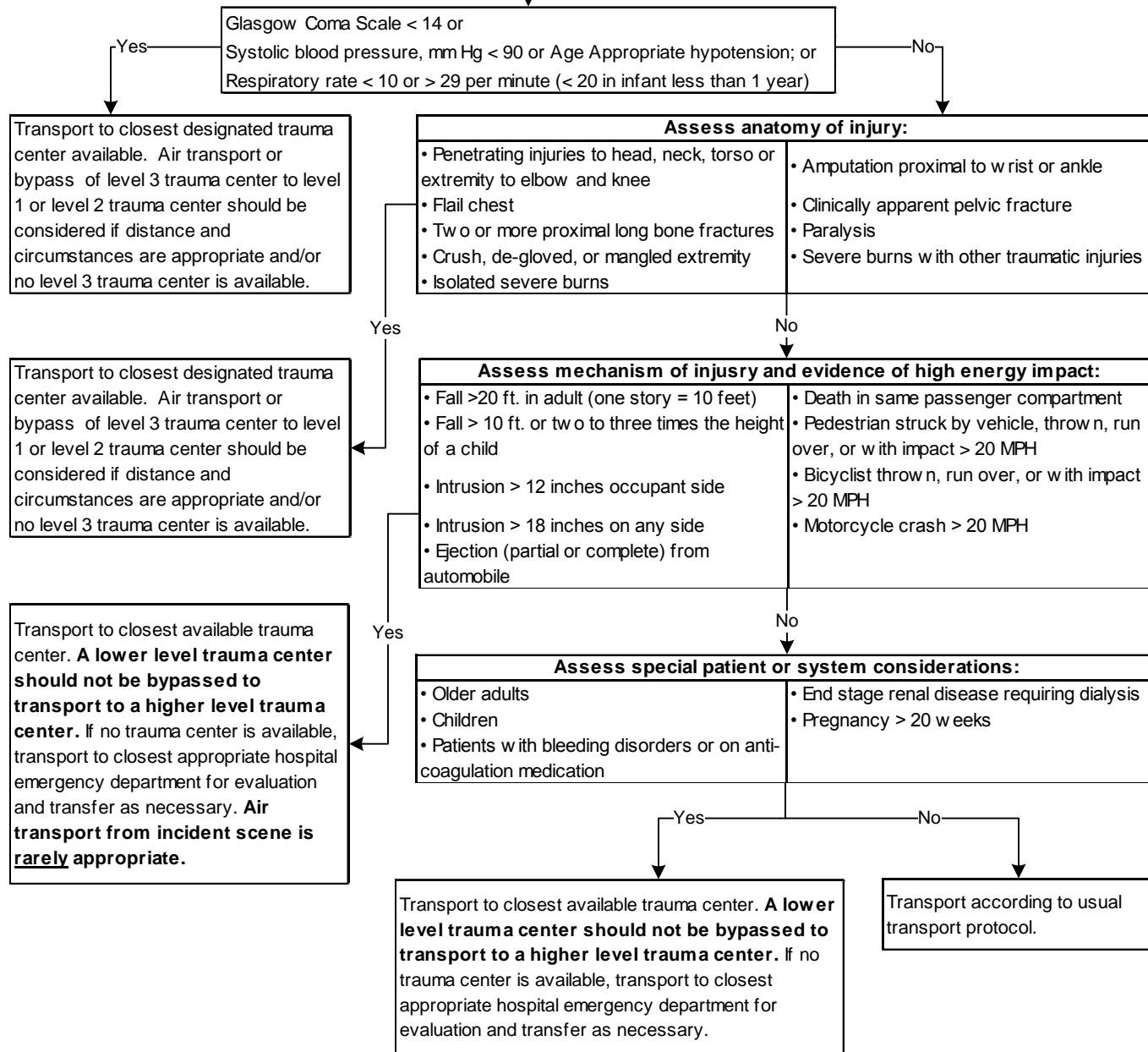
Adult Assessment Procedure focusing on initial ABC and level of responsiveness



Spinal Immobilization Protocol



Airway Protocol if appropriate



Pearls

- **Decision to call for on-scene Air Transport should come from South Carolina certified personnel associated with a South Carolina Licensed EMS or First Responder Agency.**
- **EMS Service must identify - in their local protocols - appropriate hospitals when no trauma center is available.**
- **Transport Destination is chosen based on the EMS System Trauma Plan with EMS pre-arrival notification.**
- Geriatric patients should be evaluated with a high index of suspicion. Often occult injuries are more difficult to recognize and patients can decompensate unexpectedly with little warning.
- Mechanism is the most reliable indicator of serious injury.
- In prolonged extrications or serious trauma, consider air transportation for transport times and the ability to give blood.
- Scene times should not be delayed for procedures. These should be performed en route when possible. Rapid transport of the unstable trauma patient is the goal.